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THE
Physician's Companion.
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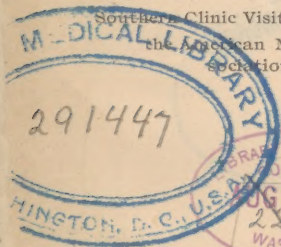
THE
Physician's Companion:

A POCKET REFERENCE BOOK FOR
PHYSICIANS AND STUDENTS.

BY

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Southern Clinic Visiting List"; Member of
the American Medical Press As-
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PREFACE.

We have endeavored in this little volume to present a certain amount of *practical* information for the physician, hospital interne, or student. While in its preparation we have freely availed ourselves of current literature, we have written from the standpoint of personal experience; and while there is very little especially original matter to be found in most large text-books, we hope our readers will be able to see in this little effort something more than a mere compilation. Whatever may be said, it cannot be accused of having very much useless matter between its pages, as will be apparent from its size! To our friend, Dr. ISAIAH H. WHITE, of this city, we are greatly indebted for the chapter on "Diseases of Women" which he kindly furnished us.

TO MY DEAR LITTLE SON,

Clarence,

THIS LITTLE BOOK IS AFFECTIONATELY INSCRIBED, WITH

THE HOPE THAT IT MAY PROVE OF SERVICE

TO THE PROFESSION, AND TO HIM

IN YEARS TO COME.

C. A. B.

THE PHYSICIAN'S COMPANION.

A SUMMARY OF PRACTICE, SYMPTOMATOLOGY, AND TREATMENT.

Inflammation and General Fever.

Inflammation.—Heat, pain, redness, and swelling, with disturbance of function. Constitutional symptoms—irritation, fever, and general disturbance in secretion and assimilation.

Treatment for local forms : Cold, sedatives, rest, elevation of limb, depletion, leeches, poultices, incisions, etc. For constitutional symptoms : Bleeding, cathartics, nauseants, diaphoretics, diuretics, opium, potass. bromide, nutrition, stimulation, etc. In all inflammations search for specific cause and treat additionally for such causes.

General Fevers.—Elevation of temperature abnormally, disturbance of nervous and digestive systems, diminished secretions of mucous membranes, skin, and kidneys.

Treatment : Arterial sedatives, aconite, veratrum viride, hydrocyanic acid. Restore secretions—calomel, ipecac, nitre, cooling and refrigerant drinks, salines, etc.

Typhoid Fever.—Continued without intermissions, prostration, bronchitis, nervous disturbances, dull, persistent headache. Pulse 70 to 140 beats, small and irregular. Temperature steadily rises from morning to evening one to two degrees a day, with a decrease of one degree from night to morning. The maximum tempera-

ture is reached by the fourth or fifth day of fever, about 104 degrees; this holds for a week or more and then descends by similar steps. Diarrhœa and tympanitis are usual symptoms, while the rose-colored spots on abdomen and chest may be looked for during second week.

Treatment : It is safe and proper to give small doses of blue mass or calomel with ipecac or Dover's powder at first to clear the bowels and help restore the secretions. Later on beware of purgatives and guard against excessive diarrhœa. Throughout disease—liquid diet, constant nourishment, milk, strong coffee, brandy, beef essence, quietude, sponging body, and general attention to symptoms arising.

Intermittent and Remittent Fevers.—Sudden high temperature with remissions will aid in diagnosis.

Treatment will be directed to the liver at first; then quinine, salicin, cinchonidia, &c. Later, mineral acids, iron, and general tonics.

Eruptive Fevers.

Measles.—Ten to fourteen days incubation; eruption on fourth day of fever, small red dots like flea bites, bronchial cough, weak eyes. Eruption fades on seventh day of fever.

Treatment : Equable temperature, milk diet, encourage eruption on skin, flax seed lemonade, nitre, spts. mindereri, syr. senega, and similar agents. Grease the skin thoroughly to relieve itching. Look out for pulmonary complications.

Scarlet Fever.—Four to ten days incubation; eruption on third day of fever, bright scarlet and diffused, disappearing about fifth or sixth day of fever.

Treatment : Grease body well, liquid diet, liq. ammon. acet., equable temperature, supporting treatment. Look

out for kidney complications, and use Buffalo Lithia Water as a drink freely throughout the entire course of the disease.

Chicken-Pox.—Four days incubation ; eruption second day of fever, small pimples, becoming vesicles in a few hours.

Treatment suggests itself.

Small-Pox.—Ten days incubation ; eruption on third or fourth day about lips, palate, and forehead. Eruption papular ; in a day it becomes vesicular and then pustular, maturing by the eighth day. Scabs begin to fall by twelfth day.

Treatment : Supportive from the start ; vaccinate the patient at once ; encourage the eruption on the chest by some counter-irritant ; give salicylic acid promptly throughout the febrile stage. Treat symptoms as they arise.

Diseases of the Lungs.

Pneumonia.—Quiet arterial excitement—aconite, veratrum viride, hydrocyanic acid dil. Equalize the circulation—quinine, ipecac, nitre, tartar emetic. Relieve local congestion—cups, leeches, blisters, poultices, and, if necessary, venesection. Watch patient and hasten resolution. Small doses calomel at first ; then mur. and carb. ammonia, tolu, senega, brandy, beef essence, and general supportive course.

Bronchitis.—In acute cases use nauseating expectorants—salines, aconite, ipecac, paregoric, counter-irritation. Chronic cases require stimulating expectorants—brown mixture, mur. and carb. ammonia, alum, squills, pot. bromide, tinct. benzoin co., atomization, counter-irritation over chest, nutritious diet, comfortable clothing, and avoidance of sudden or undue exposure.

Catarrh.—Quinine, Dover's powder, mur. ammonia, aconite, rest, and equable temperature.

Asthma.—Antispasmodics—digitalis, stramonium, chloral hydrate, and potass. bromide. [Fld. ext. grindelia robusta has done great good in our hands.—Editor.]

Pertussis.—Tonics, antispasmodics, pure air and sunshine.

Pleurisy.—Rest, hot fomentations, anodynes, calomel, veratrum viride, jaborandi, blisters.

Hæmoptysis.—Salt, ergot, turpentine, opium. If excessive, ligature around extremities, ice, aconite, cool drinks.

Diseases of the Blood.

Scurvy, Purpura, Anæmia, and Chlorosis can all be treated on general principles as regards pure air, bracing tonics, vegetable acids, fruits, iron, hypophosphites, and good diet.

Pyæmia.—Symptoms of general blood poisoning, shivering, sweats, rapid pulse, diarrhœa, and intense prostration. Quinine, tonics, stimulants, ammonia, sulphites, etc.

Diabetes Mellitus.—Feverishness, great debility, excessive flow of urine, sugar on testing. Give a non-starchy diet, the mineral acids, tr. iron; encourage action of skin.

Uremia.—Blood poison from retained urea. Convulsions, coma, albuminuria. Jaborandi, elaterium, salines, stimulants. Buffalo Lithia Water is invaluable in these cases. Do not confound this with other waters of less value.

Diseases of the Bones.

Caries.—General disturbance, fever, deep-seated pain, fistulous openings. Removal of dead bone, tonics, cod-liver oil, iron, phosphate of lime, generous diet.

Necrosis.—Surgical interference, tonics, and generous diet.

Periostitis.—Pain, feverishness, tenderness locally, and increased severity of symptoms at night. Iodides, opium, mercurials, blisters, belladonna and mercury liniment. If due to syphilis, treat with minute doses of hyd. bichloride in alcoholic solution—1-64th gr. three times a day.

Rickets, Spinal Caries, Hip-joint Disease, etc.—Rest, tonics, Reed & Carnrick's peptonized cod-liver oil with milk, and the hypophosphites will be found to fill the want exactly in such cases. A nutritious diet of animal food, and fixation so as to support, rest, and relieve pressure on diseased surfaces, is absolutely essential in all conditions of this kind.

Diseases of the Brain.

Apoplexy.—Onset sudden, insensibility, snoring, dilated pupils, general paralysis. If pulse is full, hard and thrilling, with flushed face, bleed; if tendency to syncope, avoid it. Use cold to head, turpentine enemata, mustard foot baths, rapid purgatives—croton oil, etc.

Concussion.—Easy breathing and usually natural pupils, insensible to light, however; pupil may be contracted, or one contracted and one dilated; complete loss of muscular power, mental confusion or unconsciousness, heart's action feeble and irregular. Stimulate until reaction sets in, cold to head, with quiet and rest, saline or croton oil purge.

Sunstroke.—Sudden faintness, vertigo, coma. Stimulants, cold to head and spine, sinapisms to extremities, stimulating enemata, amyl nitrite by inhalation, nitroglycerine.

Convulsions in children due to gastric or intestinal irritation. Favor vomiting, give enemata, calomel and soda. At first use warm bath, then cold to head, quiet, etc.

Convulsions of Epilepsy.—Cold to head: put cork between teeth to prevent tongue from being bitten. Chloroform, amyl nitrite. When seizure is over treat with bromides, alteratives, and tonics. It will pay you well to search for the exciting cause in every case of epilepsy. Many of these unhappy cases depend upon removable causes and are curable.

Puerperal Convulsions.—Bleed PROMPTLY, fully and fearlessly, chloroform, cold to head, and prompt delivery. After delivery, chloral and potass. bromide, with gelsemium or veratrum viride, if necessary.

Meningitis.—Fever, pain, delirium, intolerance to light or sound, coma. Calomel and jalap, croton oil, potass. iodide, blisters to nape of neck, or shave scalp and apply.

Diseases of the Bladder.

The chief bladder troubles commonly met with are Irritation and Cystitis. The acute and simple conditions are treated by rendering the urine bland and unirritating, rest to the organ and avoidance of errors of diet and exposure to cold and dampness.

Cystitis of a chronic character, and due to retention of urine, prostatic disease, or stricture, requires relief by catheter, surgical removal of cause, and attention to the condition of the urine, washing out bladder with warm borax water, administration of benzoic acid, fld. ext. golden rod, etc.

The value of benzoic acid is truly wonderful in these conditions of chronic cystitis with retained urine, for this urine, becoming highly ammoniacal, behaves like a caustic upon the coats of the bladder, and the benzoic acid prevents decomposition and renders the urine acid and inert. Dr. Bird recommends the following as of great service in chronic uric acid gravel :

Carbonate of sodium $\bar{3}$ iss.
 Benzoic acid grs. xl.
 Phosphate of sodium $\bar{3}$ iij.
 Hot water $\bar{3}$ iv.

Dissolve and add—

Cinnamon water. $\bar{3}$ vijss.
 Tincture of hyoscyamus $\bar{3}$ iv.

Take two tablespoonfuls three times a day.

Diseases of the Kidney.

The quantity of urine excreted by the healthy adult per day is between 30 and 60 ounces, slightly acid, which acidity is greatly increased by animal food and diminished by vegetable food. Specific gravity about 1020.

Albuminuria.—Give patient milk, eggs, and diet rich in albumen. Avoid much lean meat; rest the body, and clothe so as to avoid all changes affecting the cutaneous circulation; keep skin and bowels moderately active. The iron tonics do much good in these cases. Buffalo Lithia Water is of great service not only in this trouble, but in a wide range of kidney, bladder, and blood troubles. In gout, rheumatism, and many forms of dyspepsia it is a pleasant and potent remedy.

Hæmaturia.—If of a malarial origin, treat specifically with quinine and the usual tonics. When from sudden congestion or capillary weakness, use ergot, gallic acid, iron, turpentine, with local counter-irritation.

Diabetes Mellitus.—See Diseases of the Blood.

Diseases of the Liver.

The chief forms of liver trouble encountered in daily practice are *congestion* and *inflammation*. The treatment consists essentially in relieving this very large gland of its undue quantity of blood and restoring secretion. To do this, rest is important, counter-irritation by cups, blisters, and leeches if necessary, while its action may be stimulated by calomel, blue mass, and ipecac, Epsom salts, senna, aloes, taraxacum, and cream tartar.

Biliary Calculi.—Ether, hot hip-bath, olive oil, castor oil, &c.

Jaundice.—Act upon skin, restore secretion—taraxacum, mineral acids, ammonia muriate, podophyllin, aloes, beef gall, acid bath, fruits and acids, exercise and counter-irritation.

Diseases of the Gastro-Intestinal Tract.

Gastritis.—Acute—pain, tenderness, loss of appetite, nausea, with symptomatic febrile disturbance—thirst, red tongue.

Treatment: Clear the stomach of offending matter with a gentle emetic; rest, bland and liquid diet (mostly milk, ice, frozen cream); morphia, opium, bismuth, blisters, iodine, cups, leeches.

Enteritis may be treated generally as gastritis, allowing for anatomical differences, and paying greater attention to rest for the bowels by opiates.

The *chronic* form of both the above will require a modified form of above treatment, but on the same general principles.

Dyspepsia.—Symptoms too numerous to attempt to describe, but referable to the stomach and after eating. The

most intractable is the nervous form, in which the patient is always uneasy, with indescribable symptoms. Here a careful attention to diet, exercise, and cheerful society will be worth everything. According to circumstances, acids or alkalies may be indicated, tonics, iron, gentian, pepsin, strychnia, bismuth.

Colic.—Clear stomach of offending matters with emetic of ipecac and mustard. Then follow with purgative and anodyne. If due to flatulence, ammonia, brandy, alkalies, peppermint, ether, &c.

Diarrhoea.—Regulate action of liver. Calomel and Dover's powder in small doses, castor oil and laudanum, followed with gentle astringents and farinaceous and simple diet, bismuth, mineral acids, &c.

Dysentery.—Treat as for diarrhoea as to diet and general medication, and insist on rest in bed, poultices, blisters, astringent and opiate enema, castor oil and laudanum, bismuth, mercury, mineral acids, tannic and gallic acid, quinine, and supportive treatment—milk punch, beef essence, &c.

Cholera.—Calomel in immense doses every quarter or half hour until liver acts; ice and iced water in unlimited quantities; rapid and diffusible stimulants; restore cutaneous circulation by sinapisms, warmth, &c.; brandy, beef essence, milk punch.

Hæmatemesis.—Ice, digitalis, aconite, acid hydrocyanic dil., rest, tannic acid, ergot, turpentine.

Hæmorrhage from bowel.—Treatment similar.

Hæmorrhoids.—Relieve congestion of the portal circulation, and constipation. Locally—tannin and glycerine, belladonna and opium ointment, sulphur ointment. Surgically—ligatures, injection with ergot, carbolic acid, &c.

SURGERY AND SURGICAL EMERGENCIES.

Probably more surgeons are deterred from active work by a fear of hemorrhage than from any other cause. It is, therefore, important that the student or practitioner should familiarize himself with the methods of preventing and controlling unexpected hemorrhage. Many operations are ill performed through a fear on the part of the operating surgeon that he might "cut an artery." We will therefore mention the methods of arresting hemorrhage as they occur to us.

They are the ligature, acupressure, torsion, cold water, hot water, the actual cautery, persulphate of iron, and other styptics. First and foremost, for the arresting of arterial hemorrhage, the result of the incision of an artery, is the ligature. It is presumed that the method by which a severed artery becomes contracted, so far as its middle coat is concerned, and thus attempts to arrest hemorrhage itself, is understood by the practitioner. It will be seen, therefore, that the effort will be to so constrict the severed end of the artery as to enable a clot to be formed, and thus meet the end desired. Consequently the amount of force required in applying a ligature should be neither very great nor applied in a jerky, spasmodic manner. The object should be simply to apply the ligature sufficiently tight to partly or entirely sever the middle coat. It is impossible to go closely into details in a manual of this size, but we would advise all to familiarize themselves with them by tying a few arteries as soon as possible.

The material used for ligatures may consist of almost anything. Good waxed silk or catgut will meet every indication. Of late years catgut has been very much in vogue on account of its being quickly absorbable and en-

couraging the healing of wounds by the first intention. Our experience has been in favor of silk, which should be rendered antiseptic by soaking in solution of bichloride of mercury.

It should be remembered that for the immediate arrest of hemorrhage in the extremities we have a valuable aid in the compression afforded by contraction of the muscles. When limbs are flexed forcibly in this way, many hemorrhages can be at once stopped, thus allowing the surgeon time to prepare for more permanent treatment.

The advantages of arterial sedatives, elevation, cold compresses, and styptics, where the bleeding is of general character, should not be lost sight of at any time.

The administration of anesthetics should also be carefully studied by the surgeon before he commences any operation, for upon the safe and judicious administration of these agents will in a great measure depend the success of his work. Most southern surgeons prefer chloroform simply, whereas ether, or a mixture of ether and chloroform, is used generally among our northern friends. With proper precautions we have found chloroform a very safe anæsthetic. We would advise, however, that the condition of the patient's heart be always examined, as well as his general nervous system. Undue fear should be taken into account, as this factor has been known to increase the risk. Where the heart and kidneys are sound, and the patient is hopeful and cheerful, it has been our custom to administer an alcoholic stimulant, with a minimum dose of morphia about fifteen minutes before giving the chloroform. An enema of chloral is an excellent preliminary to chloroform. The patient should be in the recumbent posture; the collar, waistband, &c., loosened, and a sufficient amount of air should be kept passing through the room. The anæsthetic should be

administered slowly and gradually, allowing a due admixture of atmospheric air at the same time. It should be borne in mind that chloroform vapor is heavier than atmospheric air, and the idea of having an opening *above* for air to reach the patient through the inhaler is wrong. Use a cuff, napkin, or any stiff material folded in shape of a cone; put a sponge or thin handkerchief in this, saturate with chloroform, and hold an inch or two above patient's nose, and allow air to come in *under* the inhaler. More attention should be paid to the respiration and the color of the patient's face than to the pulse-beat; but both pulse and respiration should be watched. In the event of the sudden cessation of the heart's action, you should be prepared to use the galvanic battery, nitrite of amyl, nitro-glycerine, and Nelaton's method, which consists in lowering the head and shoulders at once, and filling the brain with blood on hydrostatic principles. In chloroform narcosis pull the tongue forward to prevent its falling back over the larynx. Do not shake or roughly handle the patient, and thereby insure his death, but practice artificial respiration cautiously.

By selecting proper cases, using due care, and remembering the measures for restoring the patient, death from the administration of chloroform should be of very rare occurrence.

Antisepsis.—At the present time another very important feature in successful surgery will be found in the application of antiseptic principles. While too much certainly has been claimed for antiseptics, there is, nevertheless, some justification for the great enthusiasm in their favor exhibited by some of the first surgeons of our country. It is possible at the present day, by the observance of certain well-defined rules, to perform a surgical operation of a grave character and heal the wound with-

out the formation of a single drop of pus. This is the claim of antiseptic surgery, and it well merits the attention of all who desire to give their patients the benefit of advanced scientific progress. It is advisable, if possible, to render the patient and his surroundings, as well as the hands of the assistants, the sponges, &c., all antiseptic before the commencement of the operation by immersing in and washing with the solution of bichloride of mercury of various strengths, usually one to one, two, or three thousand parts of water. During the operation the incised portion should be sponged with this solution. Instruments should be rendered antiseptic by immersing in boiling water. After the operation the wound should be cleansed with it, antiseptic silk ligatures applied and cut off short, approximated with antiseptic sutures, dusted over with iodoform, and dressed with iodoformized gauze or bandage, thus hermetically sealing it and preventing the ingress of any external germs. A wound so treated will, in the majority of instances, heal by first intention.

HEMORRHAGE FROM ACCIDENTS.

Scalp Wounds.—If no large artery, temporal or occipital, be wounded, pressure alone will be sufficient treatment. Clip the hair closely, cleanse the wound thoroughly with antiseptics, bring the edges carefully together, dust over with iodoform, place a pad of dry lint upon the wound, and apply a bandage. Should one of the arteries be partially divided, sever it completely and apply pressure. It is not usual to put stitches in a scalp wound, although, under certain circumstances, this may be safely done.

Wounds of the Face.—These are disposed to bleed freely. The ligature, compress, and collodion will be found

serviceable. Sutures should be of light material, so as to cause no disfigurement. Adhesive plaster may be relied upon in these injuries to a considerable extent.

Cut Lip.—The lip is frequently cut by a fall driving it upon the teeth. Hemorrhage from division of the coronary artery is sometimes profuse. The introduction of the hare-lip pin and the use of the twisted suture is an excellent method of closing the wound and arresting the hemorrhage. Collodion may be applied over the wound.

Nose Bleeding.—This may frequently be checked by the upright position, the application of cold water, the administration of ergot, spirits of turpentine, &c. Powdered alum may be snuffed up the nose or blown in with an insufflator. Solution of bromide of potassium is very valuable applied locally. Where the bleeding is intractable the nostrils should be plugged anteriorly and posteriorly.

Bitten Tongue.—Hemorrhage may be secured by torsion or the actual cautery. Ligatures and sutures do but little good in this position.

Ruptured Frænum.—Snip the little artery of the frænum across with a pair of scissors. Bleeding will cease at once.

Wounds of Arteries.—Stop the immediate flow of blood by pressure above the seat of injury; cleanse the wound and look for the bleeding point. Apply a ligature or torsion. If the artery is large and it is impossible to find it, it may be necessary to ligate above. Sometimes it is well to secure bleeding by the graduated compress, which consists in opening the wound and packing in from the bottom continuous pledgets of lint, securing the whole with roller. Elevated position of the limb, arterial sedatives, &c., will assist in preventing further hemorrhage.

Wounds of the Palmar Arch.—These are not so difficult as many claim. Frequent'y the artery can be found and twisted, though binding the hand upon a back splint and using sufficient pressure will answer every purpose. If pressure does not stop the hemorrhage, tie both radial and ulnar arteries.

Hemorrhage from the Rectum.—Dilate with a speculum; touch the bleeding point with nitrate of silver, or the actual cautery, and plug the rectum with lint, tannic acid, &c.

Hemorrhage from the Bladder.—Tincture of iron, ergot, gallic acid, benzoic acid, astringent injections into the bladder, with ice in the rectum and over pubes.

Rupture from Varicose Veins.—Elevation of the limb; use compress, secured by bandages from below up to and above the rupture; abso'ute quiet.

Esmarch's Bandage.

We would advise all who have not one to possess themselves of one of these bandages and some elastic tubing. This may consist of ordinary Martin's elastic bandage, which can be bought for a trifle, and three or four feet of India rubber gas tubing. By applying the elastic bandage with a reasonable degree of tension, all blood may be driven out of the extremities and its return prevented by making one or two wraps with the tubing at the point to which the bandage has been carried. This allows the surgeon to perform an absolutely bloodless operation, and to quietly and carefully examine any injured portions.

FRACTURES.

In simple fracture the bone is merely broken into two pieces. In comminuted fracture it is broken into several pieces. In impacted fracture fragments of bone are driven into one another. A fracture is compound when it communicates with an open flesh wound. It is complicated when the bone is not merely broken, but when some large vessel or other organ is injured as well. Fractures are transverse, longitudinal, oblique, &c., according to the direction of the fissure. Fractures are complete when the bone is broken entirely; incomplete when there is partial breakage and partial bending. This bending occurs only in young persons.

The special features of fracture are deformity, unnatural mobility, and crepitus or grating, and usually shortening. With these signs there is sometimes pain and swelling. When all these signs are present they prove that fracture has taken place, but the surgeon must not expect to find them all equally well marked in every case. Deformity is caused either by the direct violence of the blow or by subsequent muscular action. The surgeon should use the tape-line to avoid being deceived by apparent deformity. He should bear in mind also the attachments of the various muscles, and the effect that would naturally be produced by their contraction. If the surgeon grasps the injured bone he finds unnatural mobility, broken fragments moving freely one upon another.

The most important sign is crepitus, the grating which is produced by rubbing the broken ends of the bone together. This grating may be both felt and heard. When present it is an unmistakable indication of fracture. Crepitus cannot, however, always be heard or felt, for

there may be impaction of fragments ; and it should not be presumed that a fracture does not exist because crepitus cannot be obtained.

When the fragments of broken bone are kept in apposition union takes place by the deposit of new bone around and between them. Such new bone is called callus. That which is formed first, and which is generally very abundant, is termed provisional callus, while that which remains ultimately, after a good deal has undergone absorption, is termed the definitive callus.

When a simple fracture occurs the injury itself sets up inflammation in the surrounding tissues, and this inflammation is of the adhesive kind. Plastic lymph is poured out, forming a thick and dense sheath—a sort of natural splint around the broken fragments. Between the ends of the bones the same plastic material is effused, and the medullary canal is filled up and obliterated by it. Gradually the effused lymph becomes developed into bone. Although the bone is firmly united by the end of about six weeks or two months, it is not reduced to its normal shape and size until after the lapse of some considerable time. The superfluous callus undergoes gradual absorption, a fibrous periosteum is formed, a medullary canal is established, and at length the bone returns almost entirely to its natural state.

When broken bones are kept in accurate apposition—when they are covered by little more than their own periosteum—provisional callus is small in quantity.

Treatment of Fractures.—In treating all fractures our aim should be to reduce the fragments to their proper position, and to keep them in such position until nature has effected their union. It is important, therefore, to reduce the fragments at the earliest possible moment, and thus endeavor to prevent muscular contraction and

injury to the soft parts. Where there is great rigidity of the muscles, and the fragments have been unreduced for some time, chloroform will be found a valuable aid. When the fragments have been reduced the limb should be placed in the most favorable position to prevent contraction. To this end bandages, splints, and mechanical appliances will have to be used.

Bandages and splints may be constructed of various materials. For splints we have wood, leather, felt, gutta percha, binders' board, and almost any light article; and besides these we have plaster of Paris, starch, &c., for making immovable splints, bindings, &c. Bandages, or rollers, as they are sometimes called, are of several different kinds. Those most commonly used are made of unbleached cotton or calico. Some are composed of woven cotton fabrics, and pass under the name of elastic or cotton bandages. Others are made of flannel. Sometimes coarse muslin or crinoline roller is required in the application of plaster of Paris or starch. Bandages are classed under three heads, and, according to their length and breadth, are spoken of as arm bandages, leg bandages, and rib bandages. They are suitable for other purposes, of course. The arm bandage should be two inches wide by eight yards long; the leg bandage two and a half inches wide by ten yards long, and the rib bandage five inches wide by twelve yards long. These are the dimensions into which bandages are usually cut, and which will be found most generally useful in practice, but they may be made broader, narrower, longer, or shorter, according to the purposes for which they are intended and the situation to which they are to be applied. They should be cut off as soon as their object has been attained, as there is no advantage in any unnecessary turns of a roller. When a bandage is rolled

from one end only it is called a single-headed bandage ; when it is rolled from both ends it is called a double-headed bandage. Sometimes we desire a bandage to contract a little upon the part to which it has been applied, so as to keep up a slight degree of pressure, or to afford some slight support. Then we must have recourse to an elastic cotton or flannel bandage. These may very properly be applied to an œdematous limb, to support varicose veins, or to promote absorption of the thickening and effusion that frequently remain consequent upon fractures or other injuries. A flannel bandage has special advantages. It is capable of absorbing moisture, it retains warmth, and its surfaces adhere to one another, so that it keeps its place better than other kinds of roller.

Bandages should be made of one continuous piece, without any joining ; the selvages should always be torn off. If blood has been extravasated, its absorption may be promoted by the exhibition of spirituous lotions. If the swelling becomes great—so that splints and bandages interfere seriously with the circulation, and the extremities in consequence become cold and blue—the bandages must be loosened at once, or gangrene may supervene. The starch bandage may be applied as follows : Starch is to be mixed with water until it forms a thick paste ; a little spirit is added to hasten its drying. A cotton roller is then saturated with the paste. The surgeon should keep a basin of paste at hand, and while he is applying the bandage it would be well for an assistant to smooth a little more of the extra paste over it. The bandage should be applied just as an ordinary roller. The whole surface of the limb should be covered with at least two layers of bandage ; and if, after this, there are any parts which appear weak, they should be strengthened by short straps of bandage or lint in order to give the necessary

support. Before applying either the starch or the plaster of Paris we prefer to apply next to the limb, for purposes of protection, either layers of cotton-wool or a flannel roller.

In applying plaster of Paris to the leg we often put on a long, close-fitting stocking, which protects the limb well, and furnishes a good hold for the plaster. What we have said of the starch bandage will apply almost equally as well for the plaster. Of course it requires much greater speed in application of the plaster on account of its quicker setting ; though to a man of average intelligence or of any mechanical tact but little instruction should be necessary as regards the details attendant upon the management of either bandages or other mechanical appliances necessary to the treatment of fractures. There are many points which will arise in individual cases that can be better treated on their own merits than by any instruction derived from text-books.

The limb should be kept thoroughly still, and until the bandages have become thoroughly dry and hard. It will take eight or ten hours for a starch bandage to dry thoroughly, and from one to two hours for plaster of Paris.

Before putting on splints of any kind, it is proper to bandage a limb nicely with a first roller, as this ensures against undue muscular contraction, and obtains uniformity of pressure.

What we have said above applies to all fractures of the extremities. We will only mention specifically a few fractures which require special consideration.

Fracture of the Skull, with depression, constitutes the most serious injury to which a patient is liable. Here immediate operative interference is demanded. An incision should be made through the scalp of sufficient size to allow of a thorough inspection of the seat of injury. The depressed bone should be lifted. Spiculæ of bone

and blood clots should be removed from the brain. The parts should be cleansed, antiseptically treated, and the scalp wound closed by sutures and covered with a compress. Of course the general condition of the patient must be carefully watched; quiet insisted upon; diet kept light and unstimulating, and the least tendency to an inflammatory condition guarded against promptly.

Fracture of the Bones of the Face.—The nasal bones are not unfrequently broken by direct violence. The bridge of the nose is depressed, and the whole organ looks flat and broad. The depressed bones should be lifted by a director or other suitable instrument, and retained in their proper position by a roll of lint introduced into the nostril, while strips of plaster are placed outside.

Fracture of the Lower Jaw.—The most usual seat of injury is near the bicuspid tooth. The diagnosis is easy. The mental portion is depressed, while the ramus is drawn upwards or inwards. Crepitus is distinct. The point of fracture can be felt. The gums are lacerated, and the saliva dribbles from the half open mouth. In this the teeth which are only loosened should be left and secured in their places by silver wire. Teeth which are entirely loose and fragments of detached bone had best be removed. When the fragments have been restored to their proper places or removed, and the teeth brought into line, the jaw should be fixed in its position by moulding binder's board or gutta percha splints over it, the same being secured by a proper roller. Under the head of "Fracture of the Lower Extremity of the Humerus," we describe the best dressing for fractured jaw.

These cases are usually fed on liquid diet. This may be sucked through an opening where one or more teeth

may be absent, or through a rubber tube ; mush and gruel being taken as soon as possible.

Fracture of the Ribs.—This is indicated by sharp local pain, aggravated by the drawing of a long breath, and great tenderness on pressure. Crepitus may sometimes be felt or heard, and a depression detected in the outline of a bone. When the injury is confined to one side the broken ribs should be supported with broad strips of adhesive plaster passing half round the chest. In this way they are kept at rest, while the respiratory movements of the sound side are not interfered with. But when ribs on both sides are broken a broad roller should be applied in circular turns around the chest, beginning from below and gradually ascending, each fold overlapping about one third of the preceding one. The bandage should be drawn sufficiently tight to give a firm and even support to the whole chest ; and in order to retain it in its place a separate strip of calico should be placed around the neck in the form of a brace, with ends coming down in front as low as the bandage extends. These ends should be stitched to each circular turn of the bandage.

In all cases in which the point of a rib or the fractured bone has been driven in upon the pleura or lung, or other important organ, the surgeon should not hesitate to cut in and promptly remove this great source of immediate danger.

Fracture of the Clavicle.—This usually occurs about the middle of the bone, and sometimes near the acromial end. When the seat of fracture is near the acromial end the signs are not well marked, but when it is about the middle there is displacement which is very characteristic. The outer fragment is drawn downwards and inwards. This is owing partly to the weight of the arm, and partly to the action of the pectoralis minor and subclavius.

When the clavicle is broken near its acromial end all that is needed is to put a figure of eight bandage around the shoulders, and to support the elbow and forearm in a sling. In this way we raise the point of the shoulder and draw it outwards and backwards, these being two leading indications in treatment. When the fracture is situated, as it generally is, about the middle of the clavicle, there are then three points to which special attention should be paid. The shoulder should be drawn back by a figure of eight bandage, the point of the shoulder kept out by a pad placed in the axilla, and the elbow and forearm well supported in a sling. Another method is to fasten the arm back by strips of adhesive plaster carried around the arm and fastened on the back, then carry the band over upon the opposite shoulder and fasten it there with adhesive plaster.

Fracture of the Humerus.—This bone is occasionally though rarely broken at the anatomical neck—that is, just within the line of insertion of the capsule. This is, of course, an intra-capsular fracture. The signs of the injury are obscure. There is pain, swelling, loss of power, the outline of the upper end of the bone is irregular, and if the fracture is impacted there is a slight degree of shortening. It sometimes happens that the greater tuberosity is broken off. In this case the shaft and head of the bone are drawn upwards and inwards, while the greater tuberosity is carried upwards and outwards. By this displacement the breadth of the shoulder is increased to a remarkable degree, and the separation of the fragments is very distinct. We have also *fracture* at the *surgical neck*, which lies between the tubercles above and the insertion of the latissimus dorsi and the associated muscles below. In this accident the upper fragment is turned upwards and outwards by the muscles which are

inserted into the greater tuberosity, while the lower fragment is drawn upwards and inwards by the deltoid and the pectoralis major. Sometimes the head of the bone remains in its right place, but below it there may be a depression. The lower fragment points beneath the skin in the direction of the coracoid process, the limb is shortened, and crepitus can easily be obtained.

Fractures which occur about the shoulder-joint are extremely difficult to diagnose with accuracy, and in practice it is no easy task to determine the precise nature of the injury, though for practical purposes these nice distinctions are of no special importance.

Fracture of the Anatomical Neck, and where there is separation of the greater tuberosity, require principally that the arm should be kept at rest and supported in its natural position. As soon as the acute symptoms have been subdued it is usual to envelope the shoulder and upper arm in a leather or gutta-percha cap, and to place the forearm in a sling, which must support the elbow without pressing it upwards. The shoulder cap should be large enough to fix the parts thoroughly and to keep them perfectly still. To do this it should extend from the middle of the clavicle nearly to the lower end of the humerus, and should be moulded upon the shoulder and arm accurately and uniformly. This mould should be softly and smoothly lined with some soft material, and have holes pierced through it to admit of ventilation and to add to its lightness. The whole should be secured with a light roller.

Fracture through the Surgical Neck and fractures through the epiphysis generally present some displacement, and require accordingly other appliances. Here the object is not only to keep the parts perfectly at rest, but also to press the lower fragment outwards, for it has

a tendency to be drawn upwards and inwards by muscular contraction. Under these indications the splint should be put on the outside of the arm, and be long enough to reach from the shoulder to the elbow, so as to fix the whole length of the humerus. A second shorter splint is then placed on the inner side of the arm, so as to push the lower fragment outwards and keep it in its proper position, and in order to carry out this object more efficiently it may be necessary to apply a smaller pad over the point of fracture. Whatever splints are used should be well padded, and there should be additional padding above the condyles, so as to prevent any undue pressure upon these prominences. These splints may be secured by bands or webbing encircling the limb and fastened upon the outer side by buckles. This makes the splint lighter and cooler. After the splints have been applied the upper arm should be fixed by a few turns of a roller passed around the chest. The hand and wrist should then be supported in a sling, but *do not* include the elbow, as we desire the weight to assist in bearing down the lower fragments; indeed, the arm can be allowed to hang down and make extension by its weight.

Fracture of the Shaft of the Humerus.—The arm should be first bandaged from the hand upwards. A splint should be placed at the outside extending from the shoulder to the elbow. A second shorter splint should next be fitted upon the inner side of the arm, and if needed one or two smaller ones may be placed anteriorly and posteriorly to correct any displacement. The arm, of course, should be first bandaged from the hand upwards above the seat of fracture. After the splints have been adjusted the hand and wrist should be carefully supported in a sling. We prefer the use of binders' board or plas-

ter of Paris in these injuries. Either may be easily and quickly applied, and they afford every necessary support.

Fracture of the Lower Extremity of the Humerus.—These fractures are either comminuted or compound, and are frequently associated with dislocation. On account of the rapid inflammation which usually sets in, it is difficult, oftentimes, to discover the precise nature of the injury. The treatment will be about the same in either case. Active inflammation must be treated by fomentations, cold lotions, leeches, &c. ; simply laying the arm upon a pillow, without any appliances or bandages, &c. After the inflammation has subsided, the arm should be bent to rather less than a right angle, so as to give the most useful member in the event of ankylosis. A rectangular splint should then be applied on the inner side and fastened by straps of webbing or buckles, or by bandages. A good splint for this kind of work is one made of iron or perforated zinc, and jointed at the elbow, so as to allow us to make any angle that we may desire. If necessary, the rectangular splints may be applied on each side of the limb, though where the outer one can be dispensed with it is better. Over prominences these splints should be well padded. After the apparatus has been adjusted, the forearm must be supported in a sling. Here, as in other fractures of the humerus, nothing comes in so well as the plaster of Paris bandage, which may entirely encircle the limb, or be put on in sections.

While upon this subject, we will describe a method of making a plaster bandage suitable for a number of fractures where accurate moulding is desirable. Cut from three to seven or more pieces of crinoline or stiff muslin, and into each piece rub an abundance of plaster of Paris with the hand, laying one piece upon another until you have a layer of the proper thickness all charged with the

plaster. Roll the whole over lightly ; place it in a basin of hot water until it becomes thoroughly saturated ; then unroll, spread it out smooth in this condition, apply to the limb, or wherever it is required, moulding it accurately, and pass a roller over it to keep it in exact position. In ten or fifteen minutes this will become sufficiently hard to take off and trim, pad, &c., and we have a firm splint, accurately adapted to the parts, and which may be taken off from time to time, in order to examine or dress the parts, if necessary.

In fractures of the shoulder-joint, or, in fact, of any portion of the arm or forearm, the bones of the leg in children, fractures of the lower jaw, and other minor fractures, we recommend this appliance, and over all others that we have already mentioned.

If the fracture is compound, and the opening into the joint is but slight, an attempt may be made to save it by continuous application of cold, or by antiseptic treatment ; but if the joint is freely opened, excision or amputation must be considered.

Fracture of the Forearm.—The olecranon may be broken either by external violence or by muscular action. In simple fracture of this bone the forearm should be kept extended by means of straight splints on the anterior surface. The splint should extend from the middle of the upper arm to the middle of the forearm, and be well padded. It is well, also, to place a small pad on the back of the arm just above the elbow, to assist in drawing down the upper fragment. In this fracture the plaster of Paris bandage comes in admirably. The union of this bone is not always satisfactory, and it is well for the surgeon to warn the patient of the fact.

Fracture of the Middle of the Forearm.—Both bones may be broken, or only one. When both are broken,

displacement and crepitus make the diagnosis easy. When one only is broken, it may be more difficult to determine the exact nature of the injury. Fractures about the middle of the forearm, whether of one or of both bones, should be treated by placing the arm in the mid-position between pronation and supination, and fixing a straight splint on each side. The splint should be a little broader than the arm, and long enough to support the whole arm. The inter-osseous space should be carefully preserved by placing a proper amount of padding, or laying a compress between the bones. After the arm is put up, it should be carried in a sling, or leather or binder's board trough, which will support the entire arm and hand.

Fracture of the Lower End of the Radius.—This is known as Colles' fracture, and special care must be taken in its treatment. It must be carefully distinguished from dislocation of the wrist, which is a very rare accident, while fracture is very frequent. The conspicuous symptoms are a distinct prominence on the dorsal aspect of the wrist, which looks as if dislocation backwards had occurred. Corresponding to this, on the palmar surface, is a well-marked depression, and above this again there is another prominence similar but less distinct than that on the dorsal aspect. The hand is thrown a little towards the radial side, and the styloid process of the ulna becomes remarkably prominent. The prominence on the dorsal aspect is due to the lower fragment of the radius, which is thrown backwards on to the lower end of the upper fragment, carrying the carpus along with it. This also explains the palmar depression. The prominence of the palmar aspect is caused by the lower end of the upper fragment. The obliquity of the hand and the projection of the styloid process of the ulna are due to muscular action, and are brought about by the contraction of

the supinator longus, the extensors of the wrist, and the pronator quadratus. In this fracture it is advisable to make as much extension as possible, and to strongly bend the hand over towards the ulnar side. As a retentive apparatus, a pistol splint has been recommended. This should reach from the elbow to the roots of the fingers. It is generally placed on the anterior aspect of the limb, or, if necessary, it may be applied on the posterior aspect. It should be secured by means of an arm bandage. The arm may be carried in a sling. In our own practice we have had good results, and never trouble the patient with wearing the pistol splint. We have simply preserved the inter-osseous space by carefully using the proper compress, or pads and two straight splints.

Fractures of the Metacarpal Bones and Phalanges.—These are generally detected by the history of the injury, loss of power, pain, and crepitus. The best mode of treating the fracture of metacarpal bones is by laying the extended hand upon a wooden or gutta-percha splint, cut to the parts.

Fractures of the Pelvis.—These fractures are often complicated with injury to the internal organs, which makes them very serious. Very often there is fracture of the rami of the pubes, or ischium, or the sacro-iliac articulation. We have pain, inability to stand or walk, unnatural mobility, and crepitus. The complications that are most likely to arise are rupture of the bladder or urethra, with extravasation of urine, laceration of the rectum, or fracture through the acetabulum. A catheter should be passed to ascertain the condition of the urethra or bladder. A broad bandage or padded belt should be placed around the hips, the knees should be tied together, and the patient kept perfectly quiet.

Fractures of the Upper Extremity of the Femur are divided into intra-capsular and extra-capsular. The former is almost peculiar to persons over fifty years of age, and arises from very slight causes, such as tripping or stumbling. We have pain, loss of power, crepitus, absence of the natural prominence of the trochanter, and shortening and eversion of the leg. Impaction may obscure these signs. The union of these fractures is usually fibrous. It is seldom necessary to use any splints. The patient should be kept in a recumbent position for ten or fourteen days, and then be allowed to get up and move around on crutches. He will probably be slightly lame for the rest of his life, but with the help of a stick he will walk very well. In the latter (extra-capsular) the injury comes on before the age of fifty; the symptoms resemble those of the foregoing, but are more strongly marked. In this case we aim to get bony union. A broad bandage should be passed around the hips so as to prevent movement between the fragments. The limbs should be then extended, and fixed in that position by means of the long splint.

Fractures of the Shaft of the Femur.—Diagnosis is simple. There is deformity, pain, loss of power, crepitus, shortening and eversion. This may be treated either by the long splint or by the double inclined plane. The long splint is the more valuable, and will be required in the majority of cases. The splint should be long enough to reach from the fold of the axilla to about four inches below the foot. It should be pierced with two holes near its upper end, and at its lower end it ought to be deeply notched. It should be well padded, and it is advisable to carry the pad over the upper end of the splint, so as to prevent it from galling the skin of the axilla. The pad should be pierced with holes corresponding to those in

the splint, so that the perineal band may slip through it easily and be loosened or tightened at pleasure. In applying this splint the surgeon should be supplied with a piece of strong tape, a silk pocket handkerchief, or some other strong, soft material long enough to pass from the upper end of the splint around the perineum back to the same point, to be tied in a bow. This constitutes the perineal band, and it should be well padded where it presses upon the perineum.

Having applied the perineal band, the splint must then be laid along the outer side of the affected limb, and the foot must be fastened to the lower end of it. In doing this it is a good plan first to bandage the foot and ankle in the ordinary way, to protect them from the pressure of the splint and to prevent their swelling; or, instead of this, the foot may be enveloped in a layer of cotton wool. The surgeon should then take a leg bandage and make a few turns around the foot and ankle in the form of a figure eight, so as to obtain a firm hold, after which he should carry the roller in the regular way around the ankle and through the notches in the lower end of the splint, so as to fasten it securely to the foot. Then he should get an assistant to make extension from the foot while he draws the perineal band tight and ties it in a bow on the outer side of the splint. In order to keep the parts in position it is sometimes necessary to apply a bandage over both the leg and the splint, and also to put a few turns of a broad roller around the pelvis and chest. It is useless to add that all bony prominences should be thoroughly protected by padding, and that before putting on any apparatus the entire limb should be well bandaged from the toes to above the seat of fracture. Much can be done by attending to the position of the

limb, supporting it by pillows, sand-bags, and other appliances alongside and underneath it.

Extension should be looked after throughout the treatment of this fracture, which may be further ensured by the application of pulley weights and sand-bags to the feet and extending over the end of the bed.

Fracture of the Lower Extremity of the Femur.—When the femur is broken near its lower end great care should be taken to keep the limb at rest, so as to prevent, as far as possible, any inflammation of the knee joint. The simpler cases of this fracture are very well treated by Liston's long splint and the perineal band. If the injury is more severe, or the patient very restless, McIntyre's splint or Salter's swing may be used. It must be remembered that in severe injuries of this kind ankylosis may take place. The surgeon should so warn his patient, and at the same time remember that a slight degree of flexion at the knee is the position that will leave the patient the most serviceable limb. Plaster of Paris comes in well in this case.

Fracture of the Patella.—The symptoms are inability to stand, or to extend the joint, with crepitus. We have never found it necessary to wire the patella, or use hooks, or resort to any barbarous method. Extend the limb and bandage well, using a figure of eight bandage at the knee; put on a back splint, elevate the foot and leg so as to relax the muscles, and as soon as possible put on a plaster cast from the foot well up over the knee-joint. Let the patient walk on crutches.

Fractures of the Leg.—In simple fractures of both bones, if there is very little swelling or displacement, we may place the patient in bed for a few days, with the leg laid between sand-bags. If we have no fear of inflamma-

tion or swelling we can apply the plaster of Paris bandage and let the patient go about on crutches. In all ordinary cases of simple fracture of both bones a very good plan is to apply two side splints, with foot pieces, the splints being well padded, and secured above and below the seat of fracture by broad strips of plaster or by a few turns of the roller. A common fracture box has certain advantages. It consists of a long box with foot pieces and hinged sides, in which the leg is well packed in bran or in some similar material. This will be found especially serviceable in compound fractures.

Fractures about the Ankle-Joint.—When the foot is violently twisted outwards, the fibula is apt to give way about two or three inches from its lower end, and such fractures are frequently attended with more or less injury to the ankle-joint. In simple cases, where the fibula alone is broken, the leg should be laid upon a pillow for a few days, and then the fracture can be put up with strapping and bandage, with a starch or a plaster bandage. If, in addition to the fracture, we have laceration of the external lateral ligament and fracture of the internal malleolus, it will be necessary to confine the patient to bed and keep the leg at rest by some kind of apparatus. When the fibula is broken and the internal ligament ruptured, the foot not unfrequently suffers, and partial dislocation outwards takes place, being known as Pott's fracture. The same thing may happen with the internal malleolus when splintered off. The toes point outwards, and the external edge of the foot is turned slightly upwards. As this displacement is due in part to the action of the muscles which pass under the outer malleolus, our object must be to relax them. With this view, the ankle should be moderately bent, and then the leg may either be laid upon its outer side, on a side splint, or fixed between two

side splints, with foot pieces; care being taken to apply a roller in such a way that the outer splint shall press the foot inwards towards the middle line. Dupuytren's splint is an excellent application here. It is an ordinary straight wooden splint about three inches broad, and long enough to extend from the knee to a short distance below the sole of the foot. It should be well padded, so as to adapt itself to the inside of the leg, the pad being especially thick and firm where it fits into the hollow above the internal malleolus. The splint is applied along the *inner* side of the leg, at its upper end, by a few turns of a roller. The foot is then bent over the thick portion of the pad, which serves as a fulcrum and presses outwards the upper end of the lower fragment, and retained in this position by broad strips of plaster or by a bandage. The limb with the splint affixed may be semi-flexed upon its outer side on a pillow, or upon its inner side.

Fractures of the Tarsal and Metatarsal Bones.—These are generally the result of great and direct violence, and no broadly marked rules can be laid down for the guidance of the surgeon. We would advise placing the injured part in the most natural and comfortable position, giving attention to any comminuted wound or threatened inflammation. As soon as possible secure the parts in as perfect apposition as possible by a roller, sand-bags, splint, or retentive apparatus that may be moulded to the parts.

Where the calcaneum is broken a gutta-percha splint should be moulded upon the heel, and the leg flexed so as to relax the muscles. When the tendo Achillis is ruptured the leg should be well flexed and kept so by a cord fastened to the heel of the patient's slipper and connected with a bandage around the thigh. After either of these latter injuries a high-heeled shoe should be worn for some

time on the injured foot when the patient commences to walk.

DISLOCATIONS.

This signifies the misplacements of bones entering into the composition of joints. Distal bone is said to be dislocated from the proximal. Dislocations may be partial or complete, simple or compound, or may be complicated with fracture. They are most common in adult life; the bones of young people are more apt to break. The signs of dislocation are distortion of the limb or part, loss of power, immobility, and an irregular and unnatural outline of the joint. Sometimes there is lengthening, and at others shortening. Dislocation is, of necessity, attended with rupture of the capsule of the joint, or the ligaments, and laceration of the soft tissues. Dislocation should be reduced as quickly as possible. The aim of all treatment is to bring the articular surfaces into such a position that the muscles may be able to restore them to their proper places. The great difficulty is in overcoming the contraction of the muscles. In simple cases this may be done by manipulation with the hands. In others it is necessary to make use of pulleys, chloroform, &c.

Dislocations may be distinguished from fractures by attention to the following points, viz: Absence of crepitus. The dislocated part is usually fixed and immovable, whereas in fracture there is unnatural mobility. A fractured bone may be easily replaced, but there is great difficulty in keeping it in position whereas when a dislocation is once reduced it remains in place.

A broken bone is generally shortened, but one dislocated is unaltered in length. When fracture and dislocation co-exist, the rule is to put up the fracture firmly in splints, and then reduce the dislocation.

Dislocation of the Lower Jaw.—The chin is protruded; the mouth is open; speech and deglutition are very imperfect; saliva flows from the mouth, and the condyle can be felt under the zygomatic arch. When one side only is displaced the signs are less distinct; the chin is then pointed to the sound side. Place two corks or rubber stoppers on the inside of the molar teeth on both sides; press the chin up, and the angles of the jaw down and backwards, and the bone can be ridden back into its socket easily. The chin should be bandaged for a few days to prevent recurrence.

Dislocation of the Clavicle.—The sternal end may be dis'placed either forwards or backwards—in front of the sternum or behind it. Put a pad in the axilla and draw the shoulder back, as in fracture. Keep the end of the bone in place by suitable pads and bandages. The outer end of the bone is generally dislocated upwards on the acromion. Treatment may be conducted on the same principles as in the preceding case.

Dislocation of the Shoulder.—The shoulder is liable to four dislocations—downwards into the axilla; forwards beneath the clavicle; backwards on the dorsum of the scapula; a partial dislocation forwards, where the head of the bone rests on the edge of the glenoid cavity and the coracoid process. In all of these there is loss of power and immobility. The shoulder loses its roundness, looks angular; the acromion projects, and there is a marked depression below it. Additionally, in the first variety the head of the humerus may be felt in the axilla; the arm is lengthened; the elbow points outwards, and there is numbness from pressure on the axillary plexus of nerves. In the second the head may be both seen and felt below the clavicle; the arm is shortened, and the elbow points outwards and backwards. In the third the head may be

felt on the dorsum of the scapula, and the elbow points forwards. In the fourth the head may be seen and felt under the coracoid process.

Reduction of Dislocation Downwards into the Axilla.—There are two methods of treating this dislocation. One consists of making extension by drawing the arm downwards and outwards; the other in making extension by drawing the arm upwards. In the first method the patient should be stripped and laid upon a couch; if necessary, chloroform may be administered. The surgeon, having taken off his boot, seats himself on the margin of the couch or bed, facing his patient, and, having grasped the dislocated limb at the wrist with both his hands, he places his near foot in the patient's arm-pit, so that the hollow of the foot fits into the fold of the axilla. He then draws the arm slowly downwards and inwards; at the same time he presses steadily with his foot. The same principle may be carried out by setting the patient in a chair and placing his knee in the axilla, while the surgeon bends the arm over it.

The second method of treatment is by drawing the arm upwards. The patient is laid flat on his back; the shoulder is fixed by the hand of the operator, or by a jack towel thrown around it; the arm is raised by the side of the head, and traction is made either by manual or by mechanical force until the head of the bone is lifted into the socket.

The other varieties of dislocations at the shoulder-joint may be reduced by extension downwards, though in each case the direction of the extending force must be modified to suit the positions of the bones.

After all reductions of the shoulder-joints pads should be placed in the axilla, the upper arm bandaged to the

side, and the forearm carried in a sling for two or three weeks.

Dislocations of the Elbow.—These are considered under three heads—dislocation of both bones, those of the ulna alone, and those of the radius alone. Both bones may be displaced, either backwards or forwards. In the former case the coronoid process is very likely to be broken, and in the latter the olecranon. The ulna may be dislocated backwards. When this happens the point of the olecranon projects unnaturally, and there is a hollow above it. The elbow is fixed at a right angle. Pronation and supination will show that the radius is not implicated. Here, too, the coronoid process is very liable to be broken.

The only dislocation of the radius worthy of mention is forwards on to the external condyle, though sometimes it is seen backwards or outwards.

If the ulna is dislocated, with fracture of either of its processes, it will be easy, by extension or by flexion, to restore the bones to their proper positions, though it will be difficult to retain them *in situ*. If the ulna is dislocated without fracture, reduction is more difficult. It may be effected, however, by bending the elbow across the surgeon's knee, which he uses as a fulcrum. In the dislocation of the radius the arm should be extended, while the head of the bone is pressed down into its place. After reduction the arm should be fixed upon an angular splint and carried in a sling.

Dislocation of the Wrist.—This is extremely rare. It should be distinguished from the Colles' fracture. Extend the joint and apply a flat splint.

Dislocations of the Hand.—The metacarpal bones of the thumb and the phalanges of the thumb or of the

fingers are sometimes dislocated. Treatment consists in making extension by means of narrow tape, or by clove-hitch notch, and then securing by a splint. Sometimes it is necessary to divide the ligaments in reducing dislocation of the thumb.

Dislocations of the Hip are four in number : Upwards on to the dorsum of the ilium ; downwards into the obturator foramen ; forwards on the pubes ; backwards into the sciatic notch. In the upward dislocation on the dorsum, the head of the femur rests on the smooth surface immediately above and behind the acetabulum. In this situation it forms a prominence which may be felt, especially on rotating the limb. There is loss of power and distinct shortening. The thigh is slightly flexed on the pelvis and the leg on the thigh. The knee is bent towards its fellow on the opposite side, and the foot is turned inwards. The patient should be placed under anæsthesia, and laid on his back on a mattress, or placed on the floor. The pelvis should be firmly fixed by means of a jack towel placed under the perineum and fastened to some stationary object or staple driven into the floor. A belt should be attached to the lower end of the femur and connected with pulleys. The extending force should be applied slowly and gradually in the direction of the axis of the limb until the muscular resistance is overcome. At the same time the leg should be rotated outwards. Sometimes it is necessary to pass another towel or bandage between the thighs, so as to abduct or pull out the upper part of the femur and lift the edge of the bone over the acetabulum. After reduction the patient should be kept in bed for nearly a fortnight. A long splint or extension by weight should be applied to the limb, and additional security afforded by a bandage around the hips.

Dislocation downwards is marked by a lengthening, the leg is abducted, the toes point forwards, and sometimes a little outwards. The prominence of the trochanter is lost, and the head of the bone may be felt in its new situation. Fix the pelvis by fastening a belt around it, firmly fastening to some stationary object on the opposite side. The upper end of the femur is then to be abducted by means of a towel passed around it and connected with the pulleys. The bone is then drawn directly outwards until it reaches a point where the muscles can act upon it and restore it to its place. At the same time the knee should be adducted—drawn towards the middle line so as to use the femur as a lever.

Dislocation forward on the Pubes.—The prominence of the trochanter is gone, the limb is shortened and abducted, the toes point outwards, and the head of the bone can be distinctly felt above Poupart's ligament. Fix the pelvis by a perineal band, make extension downwards and backwards, and you can assist matters by passing a towel around the upper part of the thigh and lifting the edge of the bone above the acetabulum.

Dislocation backwards into the Sciatic Notch presents pretty much the same symptoms as the first dislocation. The affected thigh points across the middle of the opposite one. The mode of reduction differs very little from the first mentioned.

Dislocation of the Patella.—The knee is extended or slightly bent; depression may be felt in front of the joint, while the patella may be felt in its new situation. Flex the thigh on the pelvis and raise the leg, and the bone may be restored to its proper place by manipulation. After reduction the patient should wear a bandage or an elastic knee-cap for a few weeks.

Dislocations of the Knee-Joint are usually the result of great violence, and are more often complicated than simple. The tibia may be displaced backwards or forwards, or to either side. Flex the thigh, fixing it in that position ; then make extension by drawing from the ankle. When this is done use a little pressure, and the bones can be restored to their position without much difficulty. Bandage, and order that quiet should be observed for a few weeks.

Dislocations of the Ankle may occur backwards or forwards, or to either side, and may be accompanied by fracture of the external malleolus. In all cases reduction may be effected by drawing upon the foot until the bones are brought into their position, and fixing them by means of side splints or immovable plaster bandages.

LIGATURE OF ARTERIES.

Ligature of Lingual Artery.—The artery may be most commonly reached near its margin just above the greater cornu of the hyoid bone, and before it passes beneath the hyoglossus muscle. An incision should be made almost from the point of the chin downwards and backwards to a little beyond the greater horn of the hyoid bone. This incision should then be turned and carried upwards almost at a right angle to near the angle of the jaw. The flap, when dissected back, will correspond nearly with the digastric triangle. The posterior border of the submaxillary gland will have to be held aside. This will bring into view the central tendon of the digastric and the posterior edge of the mylo-hyoid muscle. The hypoglossal nerve, with a vein, will be seen lying horizontally upon the hyoglossus muscle. Feel for the posterior margin of this muscle ; the lingual artery will be found lying just above

the greater cornu of the hyoid bone. It may be necessary to divide a portion of the muscle before the ligature can be placed.

Ligature of the Common Carotid Artery.—The anterior border of the sterno-mastoid muscle, or a line drawn from the sterno-clavicular joint to the depression behind the angle of the jaw, serves as a guide to the course of the artery. Here it lies upon the anterior spinal muscles, having the sympathetic nerve behind it and the descendens noni in front. On its outside is the internal jugular vein, and between the vein and the artery, and behind them both, is placed the pneumogastric nerve. The vein, nerve, and artery are all included in a common sheath, though each has its own compartment. An incision is made about three inches long, commencing opposite the upper border of the thyroid cartilage, and carried along the anterior edge of the sterno-mastoid muscle. After cutting through the skin, platysma, and superficial fascia, the sheath of the vessels comes into view. The sheath should be then lifted with a forceps at the point where the ligature is to be applied, and a nick made in it, the flat of the blade being turned towards the artery. The opening in the sheath should then be enlarged on a director. If the vein overlaps the artery, as it sometimes does, it must be held back with a retractor. The pneumogastric nerve will probably be drawn aside along with it. Before tying the ligature be sure that it includes nothing but the artery, and see that pressure arrests hemorrhage or controls pulsation in the aneurism, as the case may be. Draw the ligature tightly, so as to divide the two inner coats of the artery. One end may be cut off and the other left hanging out of the wound; or, pursuing antiseptic methods, both ends may be cut short off. Silk is used,

or we can use catgut, and so get the wound closed, with an effort to obtain union by first intention.

Ligature of the Subclavian Artery.—The ligature at the third part of the course of this artery is the only point at which it is recommended. Lower the shoulders as much as possible, draw the skin evenly down, and make an incision upon the clavicle from the anterior border of the trapezius to the posterior edge of the sterno-mastoid muscle. Divide the platysma myoides and fascia of the neck on a director. The external jugular vein will be seen near the inner part of the wound, and must be held aside, along with any other veins that may traverse the space. In a similar way draw aside the omohyoid muscle; carefully separate the various parts with a silver probe until the outer margin of the scalenus anticus is felt. This will serve to guide the surgeon's finger to the first rib, and the artery will be felt passing over that bone. Be careful to avoid the vein, and do not mistake any of the branches of the brachial plexus for the artery, nor include them in the ligature.

Ligature of the Axillary Artery.—The artery may be secured in the lower part of its course by raising the arm from the side and making an incision in the axilla over the head of the humerus and in the line of the great vessels. By cautious dissection the median nerve and the axillary vein are brought into view. These must be held aside while the artery is separated with a silver probe and the ligature is placed around in the usual manner.

Ligature of the Brachial Artery.—This is generally tied at the middle of the upper arm. It lies under the inner edge of the biceps, covered only by integument and fascia. At this point it is crossed from without inwards by the median nerve. It is also in close relation to the

basilic vein, ulnar nerve, and the inferior profunda artery. Make an incision about three inches long; keep close to the inner border of the biceps, which is a sure guide to the artery. The median nerve and the two venæ comites must be gently drawn aside with the blunt hook, while the ligature is passed around the vessel and tied in the ordinary way.

Ligature of the Radial Artery.—This is tied at the wrist, where it lies beneath the integument and deep fascia, between the tendons of the supinator longus and the flexor carpi radialis. It is accompanied by its venæ comites, but in this situation it bears no immediate relation to its corresponding nerve. Pulsation in the artery will form the best guide to its exact situation.

Ligature of the Ulnar Artery.—It is mostly for wounds of the palm that the ulnar artery requires to be tied, and then the ligature may be conveniently placed around it just above the wrist. An incision two inches in length should be made over the artery a little to the outer side of the flexor carpi ulnaris. When the vessel is exposed pass a needle from the ulnar to the radial side so as not to disturb or injure the nerve.

Ligature of the External Iliac Artery.—The course of the external iliac artery may be described by a line drawn from the left side of the umbilicus to a point midway between the anterior and superior spine of the ilium and the symphysis pubes. It lies along the inner edge of the psoas muscle, in a sheath derived from the iliac fascia. Its accompanying vein will be found behind it, and a little to its inner side. It is overlaid in front by the peritoneum. Near its termination it comes into relation with the spermatic vessels and the vas deferens. On the front, and near the side of the artery, are a number of lymphatic

glands, with their vessels. The ligature must not be placed too near the external iliac at the upper end, or the epigastric and circumflex vessels at the lower end. The incision should be made about three inches long; it should begin about one-half inch above and to the outer side of the external abdominal ring, and be carried upwards and outwards parallel to Poupart's ligament.

When the aponeurosis of the external oblique muscle has been fairly exposed it must be divided to the same extent, or slit up on a director. The internal oblique and transversalis must be cut through in the same way, but with even greater caution. The edges of the wound should then be retracted and the fascia transversalis scratched through with the knife and broken down with the finger. The peritoneum should next be very lightly and gently raised and pushed upwards until the vessel can be reached. An opening should then be made in the sheath, the artery carefully separated from the vein, and the aneurism needle passed from within outwards. The wound should be brought together with sutures, and pressure kept upon it by means of a pad and bandage. The patient should be propped up in bed, so as to relax the abdominal muscles. Before the operation is undertaken the rectum should be emptied and the pubes shaved.

Ligature of the Superficial Femoral Artery.—The superficial femoral artery is generally tied in Scarpa's triangle, just above the point where it is crossed by the sartorius muscle. It is covered only by the integument and the fascia lata, and has the superficial femoral vein almost immediately behind it. The thigh should be slightly flexed and abducted before the operation is commenced. The course of the artery may be ascertained by its pulsation, or by a line drawn from the middle of Poupart's ligament to the inner condyle of the femur. The incision

should begin about three inches below Poupart's ligament, and be carried down the limb in the line of the artery for the space of four inches. The fascia lata should be divided to an equal extent, and the sartorius drawn a little outwards. The sheath of the vessel should be then raised with a forceps and opened, the flat of the blade being turned towards the artery. The aneurism needle should be passed from within outwards, great care being taken to avoid injuring the vein. The point at which the ligature is applied should be about five inches below Poupart's ligament. When bleeding has ceased the edges of the wound should be brought together with sutures and strips of plaster. The limb should be lightly covered with flannel or enveloped in cotton wool, so as to maintain an equable temperature and lessen the chances of gangrene.

Ligature of the Popliteal Artery.—This is seldom tied, except for wounds. In such cases the opening should be enlarged, and the bleeding vessels secured both above and below the seat of injury. In the upper part of the popliteal space the tendon of the semi-membranosus may be taken as a guide to the artery, and the incision carried along its outer border. In this situation the external popliteal nerve and the popliteal vein are both superficial to the artery, and a little to its outer or fibular side.

Ligature of the Tibial Arteries is a difficult operation, and is usually undertaken for a wound of the vessel. In such instances the wound should be enlarged, and the vessel secured above and below the seat of injury.

Ligature of the Anterior Tibial Artery.—The vessel, the course of which is indicated by a line drawn from the head of the fibula to the base of the great toe, may be secured at three different points. The artery, in the supe-

rior third of its extent, lies underneath and behind the anterior tibular and common extensor muscle, and may be exposed by a vertical incision four inches long, and carried down in the direction of the line just mentioned. The skin and superficial fascia being divided, the aponeurosis is to be slit open by a director to the full extent of the outer wound: the two muscles are then to be separated one from each other, along their raphe, and the artery, which lies in close contact with the interosseous ligament, is surrounded with the ligature, care being taken not to injure the accompanying veins. In the middle third of its course the relations of the vessel are essentially the same as in the upper, except that the long extensor of the toe is interposed between the anterior tibular and the common extensor. The artery is still deep-seated, and a long incision is required for its full exposure. A branch of the peroneal nerve sometimes attaches itself to the artery here, and must be drawn away before passing the ligature. In the inferior third of the limb the artery lies on the tibia, between the tendons and the common extensor of the great toe, the latter enveloping it on the inside. The vessel, therefore, is comparatively easy of access.

The Dorsal Artery of the Foot.—The continuation of the anterior tibial may be easily tied in any portion of its extent, as it runs down across the instep, its course being indicated by a line extending from the centre of the ankle-joint to the posterior extremity of the first interosseous space. It lies under cover of the integuments and aponeurosis, and may be readily exposed by carrying the knife along the outer border of the tendon of the long extensor muscle of the great toe.

Ligature of the Posterior Tibial Artery.—The situation

of this artery is very deep. Its course is first obliquely inwards, and then vertical, being indicated by a line extending from the inferior border of the popliteal muscle to the fascia, between the heel-bone and the ankle. It is covered in the superior two-thirds of its extent by the gastrocnemial, soleal, and plantar muscles, but during the remaining portion it lies immediately below the integument. It is accompanied and embraced by two veins, one being on each side of it. The attendant nerve lies internal to it, in the upper part of the limb, but as it descends it crosses the artery superficially, and places itself along its outer margin. The artery may be exposed and tied in the upper and middle portions of its extent. A long, vertical incision, extending through the centre of the muscles of the calf, should be made down and directly upon the artery, which, though deep-seated, may be reached more expeditiously in this manner than by other methods.

To ligate in the lower portion of this artery, between the heel and the ankle, the pulsation should be taken for the guide to the artery, and the surgeon should make an incision about two inches long directly along its track, which is nearly midway between the two points here indicated. The direction of the incision should be somewhat curvilinear, with the cavity towards the inner malleolus. The artery lies beneath three aponeurotic layers, which must be successively divided upon the director, when the needle is passed under the vessel from behind forwards, care being taken not to include the accompanying veins and nerves. The two plantar arteries begin opposite the two heads of the abductor muscle of the great toe, being the terminal branches of the posterior tibial. They are deep-seated, and are exceedingly difficult to find, and all anatomical knowledge concerning these vessels will be

found unsatisfactory in the search for them. The best plan is to be guided by the external wound. Use the knife freely, cutting in the direction of the length of the foot.

DISEASES OF WOMEN.

Symptoms of Disease of the Genital System which proceed from the organs themselves.—Abnormal sensations of heaviness, of distension, of sharp, penetrating, lancinating, dragging pain in the abdomen or back; anomalies in secretion, either qualitative or quantitative, and disturbances in function; menstruation irregular, either too profuse or too scanty, accompanied by painful manifestations; cohabitation a torment, or sensation absent, or the act is impossible; frequently sterility.

From neighboring organs: Swelling of the abdomen, disturbances of vesical or rectal function; dysuria, retention and incontinence of urine, painful defecation, constipation, rectal tenesmus, hemorrhoids, and finally cystitis and pyelitis.

Evoked in distant organs: Gastric, such as heaviness in the stomach, regurgitation, nausea, vomiting, loss of appetite; abnormal function of sensory, motor, and trophic nerves, included under the term hysteria, such as hyperæsthesia, anaesthesia, neuralgias (migraine, intercostal, mastodynia, &c.), spasms, vaginismus, globus hystericus, singultus, general convulsions, respiratory spasms; further paralysis, local congestions, chloasma, acne, eczema, urticaria; finally alterations in the psychical functions.

Etiological factors, of heredity, of early childhood anomalies in development, scrofula, rachitis), the first appearance of menstruation and its after course, later diseases (chlorosis, heart affections), abortions and labors, the course of the puerperium, the climacteric, and finally

the diseases which have effected the patient. As direct factors, trauma, excesses of various nature (venery, infectious coitus, onany, &c.), the application of pessaries, injections, injuries during labor, and injudicious local treatment.

Vaginal Examination.

Vaginal touch is best made in dorsal position, the bladder and rectum emptied, the buttocks elevated and near edge of bed or table, the knees flexed and thighs rotated outwards, the clothing loosened or removed, and a sheet thrown over patient. For exploration of uterus use the hand corresponding to the side of patient on which examiner stands; for examination of lateral fornices use opposite hand. Anoint finger with oil, vaseline, glycerine, or soap. Avoid pressure on abdomen or anything which might effect a change in the position of the examined parts. Before inserting finger in vagina examine external genitals, their size, consistency, tenderness, the perineum and posterior commissure, labia minora, and meatus urethræ. In the vestibule note the hymen, carunculæ myrtiformis, the vulvo-vaginal glands, the bulb of the urethra, the anterior and posterior vaginal walls as regards sagging, and lastly, tumors or errors in development. The finger, when in the vagina, must take account of the direction and capacity, temperature, and moisture of the canal, the posterior and anterior walls as regards smoothness, distensibility and rugosity. When the vaginal portion of the cervix is reached it is felt as a more or less conical projection, divided into anterior and posterior lips by the os, which is round or oval in nullipara; generally in women who have borne children elliptical and transversely slit, with irregular edges. The size and condition of the os, its smoothness or roughness, laceration, tumors within it or its neighborhood (Nabo

thian follicles, mucous polypi, &c.) ; the shape, direction, and length of the cervix, its consistency, and the tenderness on pressure are quickly determined. Next carry the finger around the cervix and examine the fornix in regard to the same points. Through the cul-de sac examine for a tumor or increased resistance. If found, note size, form, condition of surface, consistency, tenderness, and relation to cervix. When a tumor is found in the vault decide whether it is the body of the uterus or not, and its relation to the cervix. By penetrating with the finger as far as possible between the uterus and supposed tumor to establish its separation or continuity displacements may be detected, but not with certainty, unaided by external pressure.

Next determine the movability of the uterus. The cervix is pushed upwards, to the right and left, forwards and backwards, and note whether the body moves with it, and if after such movements the uterus returns to its former position. Thus is obtained information in regard to the length of the ligaments, their relaxation, the existence of remnants of parametritis or parametritic exudations, as evidenced by thickened bands, and note the weight of the uterus, its position and connection with other organs, and finally, the sensibility of the uterus and surroundings.

Before withdrawing the finger from the vagina proceed with the *bimanual examination*. The hand on the abdomen presses the pelvic organs downwards and fixes them. If the uterus be now lifted up by the finger in the vagina, or if the uterus is enlarged, we readily feel the fundus, or, in case of anteversion, the posterior surface of that organ, and while this is palpated by the external hand the finger in the vagina examines vaginal portion of cervix and the anterior surface of the body. By proper fixation of the uterus we may estimate its form and size, the relative size

of the cervix and body, the curvature of its anterior surface, the thickness, consistency, sensitiveness, and the presence of even minute tumors on its surface. Next determine the movability of the uterus. The internal finger pushes the cervix forward, while the external hand depresses the fundus towards the hollow of the sacrum, and the external hand examines the anterior surface of the uterus. Where finger in the vagina has ascertained that the cervix is deviated to one or another side, or that there is present a tumor or increased resistance near, by bimanual palpation we detect the reason. The absence of the body of the uterus from its normal position, the size, shape, consistency of the questionable tumor, the continuity of the tissues between this tumor and the cervix, in conjunction with what is gained by testing the mobility of the uterus, give us information as to the condition of affairs. We ascertain the nature of the flexion, whether it may be overcome, and if so, whether the organ will remain straight or resume its flexed form. In case of ante flexion, the internal finger in the anterior fornix, with the external hand lift the body of the uterus upwards, then transfer the internal finger to the posterior fornix and estimate how much the organ is straightened by the external hand. In a similar manner estimate the amount and behavior of backward and lateral flexion. The other pelvic organs may also be examined. The finger in the vagina may touch the anterior pelvic wall, the round ligaments, and the utero-vesical pouch. It is only possible to approximate the finger in the posterior fornix, where the abdominal and pelvic walls are relaxed and thin. The lateral fornices may be similarly examined. Test the sides of the uterus, then the broad ligaments and the tubes within them which simulate between the fingers rolling, thin, round cords. Behind and externally the

ovaries are examined as regards their position, form, size, surfaces, sensibility, and mobility. Determine, also, the mobility of the uterus to one or another side; also the tenseness of the lateral ligaments.

In the differential diagnosis of pelvic tumors the bimanual examination is of the greatest utility.

Tumors which occupy the walls of the uterus project beyond the surface of the organ, and appear to be imbedded in its tissues. Growths not intimately connected with the uterus may be determined as attached to it by the finger passed between them and the organ. Motion imparted to the uterus and the tumor may inform us as to the connection.

Tumors which spring from the uterine adnexa lie in the beginning laterally. Those in the parametrium, due to exudation, are so close to the uterine wall that it is impossible to find a point of separation. Small exudations may be generally differentiated by their form, immovability, unequal consistency, and sensitiveness; but the larger so frequently surround the uterus that it seems to be completely merged in them. The most one can do is to feel the cervix surrounded by tense tissue. Collections of fluids in the neighborhood of the uterus are examined as to their consistency and relation to the vagina, the bladder, and the rectum. Tumors of the ovary, the broad ligament, or the tubes may be at the outset differentiated from the uterus; but as they increase in size and approach it more closely, or become imbedded in exudative product, the difficulty becomes greater.

Bodies apparently immovable are frequently found easily displaceable by change of posture. The recognition of the ovary apart from the tumor certifies that the growth is not ovarian.

Examination with Sound.—The sound is used both for diagnostic and therapeutic purposes. The instruments most frequently used are those of Simpson and of Sims. The use of the sound should always be preceded by the bimanual palpation to determine the position and shape of the uterus. The patient in the dorsal position, a finger is inserted into the vagina up to the external os, and the sound is guided along this finger up to the os and into it. In case of great displacement it is useful to steady the cervix by means of a tenaculum. When the internal os is passed the sound usually glides in to the extent of about three-quarters of an inch, unless it catches in the folds of the mucous membrane. In case it catches, the instrument must be drawn out a trifle and an attempt made to pass it in another direction. Frequently the end of the sound must be bent in order to pass by Nabothian follicles or mucous polypi. At the extremity of the cervical canal a slight obstacle—the internal os—is encountered. In the normal uterus, and especially in young girls, slight pressure is required to pass into the uterine cavity. Always remember that the finger in the vagina constitutes a fulcrum, and that pressure on the handle, the long arm of the lever, is much intensified at the point of the instrument. Stricture of the internal os, which is uncommon, generally yields to prolonged slight pressure. In general, marked narrowing of the os is due to swelling of the cervical mucous membrane, or to flexion, or the pressure of new growths. In women who have borne children, in whom the os has been widened by inflammatory process in the endometrium or the parenchyma, the passage of the internal os is not marked by any increased resistance at that point. Generally, as the sound enters the uterine cavity it produces an unpleasant sensation to the patient. Ordinarily the

feeling is the same as that which precedes the onset of the menses. In sensitive individuals, with a narrow canal, there frequently results uterine colic, which may be intense.

When the body of the uterus lies forward, the sound enters with its concavity forwards and handle against the perineum. Extreme flexions necessitate the giving a sharp curve to the instrument. When the uterus lies backwards the sound is directed downwards from the internal os, with its concavity downwards. On the way to the fundus we test the condition of the uterine mucous membrane by gentle pressure with the extremity of the sound along the anterior and posterior wall. By moving the sound backwards and forwards it is possible to detect the presence of tumors in the cavity and the nature of their attachment to the uterus. We at the same time obtain an idea of the movability of the organ. The uterus being steadied by the sound, continued vaginal touch will enable us to determine its relation to other pelvic organs or to tumors.

To measure the depth of the uterine cavity, the index finger in the vagina is placed along the sound close to the external os, the other fingers surround the instrument, which is then withdrawn, taking care lest the index finger slips.

It may be necessary sometimes to pass the sound in the lateral position. The cervix, exposed through a speculum, steadied by a tenaculum (and a flexion, may in a measure, be effaced by traction).

For therapeutic purposes the sound may be used as an elevator to lift up a retroverted uterus. Introduced into the uterus with its concavity downwards, the handle describing a large half-circle as the "tour de maitre" is made in introducing a catheter, the sound is rotated on its long

axis until the concavity, which was downwards, becomes uppermost. The finger in the vagina, placed below the sound at the external os, is used as a fulcrum, and the uterus is lifted by depressing the handle of the sound.

The sound has been used for assisting in the involution of the puerperal uterus and correcting flexion.

Since it is often impossible to recognize pregnancy at its inception (and there are women who, in their desire to have a miscarriage induced, will purposely give such a history as to lead the examiner to pass the sound), it is well to bear in mind that by rupturing the ovum or exciting uterine contractions the introduction of the instrument may cause miscarriage, notwithstanding the fact that it was formerly recommended by such high authority as Scanzoni and Kiwisch for the diagnosis of pregnancy.

Examination with Speculum.—The ones most commonly used are the cylindrical, the bivalve, and duck-bill. The advantages of the first is the ease with which it may be used and the protection it affords to the vaginal walls when the actual or potential cautery is used. It, however, is not self-retaining, as the bivalve, which gives a better view of the cervix, and leaves both hands of the operator free for use, thus dispensing with the presence of a third person. When this objection has not to be contended with, the duck-bill speculum is the most useful. It reveals the cervix in normal condition in regard to shape and color. The examination by means of the finger and sound may be readily resorted to. Only the posterior wall of the vagina is left unexposed, and sufficient space is obtained for therapeutic and operative manipulation. The cylindrical and bivalve are best used in the dorsal position. To avoid exposure the patient should be covered with a sheet, and only the vulva exposed. Before inserting the speculum inspect the exter-

nal genita's, and by means of the vaginal touch determine the direction the instrument must take to expose the cervix. In case of displacement—particularly anteversion—bring the uterus into normal position by the bimanual method, and fix the cervix in the speculum by pressure with the external hand.

When the cervix appears, endeavor to bring the external os as far as possible into the centre of the field. Scrutinize the form, size, and surface of the cervix, the border of the os, the state of its mucous membrane as regards erosion, tumors, and the nature of discharge issuing from it. When the os is patent we look a short distance into the cervical canal. Pressure on the speculum may cause the lips of the cervix to roll out and simulate an ulceration, but the transverse ridges and the sharply-marked boundary line of the mucous membrane, when there is no erosion, will correct such an error.

The duck-bill speculum is used with patient in the left lateral position. The labia are separated and the well-oiled speculum inserted under the guidance of the index finger. The instrument should be made to follow the curve of the vagina, else the point of the blade will enter the anterior fornix. Then the perineum is retracted backward and a little upward, and the speculum handed to an assistant, who with one hand elevates the right buttock. In addition to speculum, a depressor is needed to properly expose the cervix, and if a sound is to be introduced a tenaculum to hook into the anterior lip of the cervix, which will steady the uterus and serve to draw it downward, if requisite.

As soon as the recto-vaginal septum is retracted, air rushes in, and we see the anterior vaginal wall and the cervix. If this is directed greatly backwards it is brought fully into the field by means of the tenaculum hooked

into the anterior lip. When the vagina is large or the anterior wall relaxed this wall prolapses into the field of vision, and must be elevated by the depressor.

Before the inspection of the cervix and vaginal walls the secretion (blood, pus, or mucus) must be wiped away by absorbent cotton held in long forceps or twisted around a probe. If the secretion, like that of the cervix, is very thick, it may be dissolved by dipping the cotton in an alkaline solution before application.

Acute Oophoritis.—Symptoms: Severe pain and great sensitiveness to touch in region of ovary, which is usually enlarged. Fever and chill. Resolution occurs within a week or proceeds to abscess—rare. Causes: External violence, gonorrhœa, suppression of menses, or extension from pelvic peritonitis. Treatment: Chloral enemata, morphia hypodermically, bromide of potassium, ice-bag, leeches.

Chronic Oophoritis.—Symptoms: Fixed pain over ovary, dysmenorrhœa and hysteria, pain in rectum and down thighs, exaggerated after defecation, leucorrhœa, and sometimes dyspareunia. Course: Chronic and common, usually due to uterine displacement. Treatment: Bromide of potassium, cannabis indica; locally, tincture iodine, blisters, oleate of mercury, correct displacement of uterus.

Amenorrhœa.—Where menstruation is and always has been absent there is imperfect or tardy development of ovaries and uterus. Treatment consists in everything that will favor physical development. Where menstruation is scanty or irregular, if the general health is good and no pain, no special treatment is required; but if there is disordered health and the most common condition (anæmia and constipation), give iron (Blaud's pills), deutoxide of manganese, aloes, and salines, ergot; hot hip

baths several nights in succession before expected period ; good diet, fresh air, and plenty of exercise in open air. Some patients flow more if they remain in bed during the period. Galvanism will sometimes succeed when everything else fails.

Dysmenorrhœa.—Varieties : Neuralgic, congestive or inflammatory, obstructive, membranous, and ovarian. Remedies : Liq. ammoniæ acet., belladonna, chloral hydrate (preferably by enema), iron, deutoxide of manganese, guaiacum, opium, potass. bromide, galvanism, dilation of cervix (in obstructive form), and correction of displacement when present.

Menorrhagia and Metrorrhagia are symptoms of several uterine affections, and an examination is essential to diagnosis. It is sometimes due to debility from protracted nursing, local causes, tumors, polypi, &c., affections of the os and cervix, congestion of the womb or ovaries, subinvolution or inversion of the womb. Remedies : Arsenic, Rockbridge alum water, cannabis indica, ergot, gallic acid, bromide of potassium, quinine in malarial districts, hot vaginal injection, with or without astringents, such as alum and tannin ; tampon the cervical canal.

Inflammation of the endometrium may be confined to the cervix, or the body may be also implicated. The salient points of diagnosis are leucorrhœa, pain in back, loins, and pelvis ; menses too scanty or severe, too frequent or reverse ; nervous disorders. Bimanual examination elicits pain in fundus or cervix ; in cervical form, os enlarged, lips puffy or eroded, and sound encounters obstruction at internal os. Where the fundus is involved the os interum is usually patulous, uterine cavity prolonged, and there is tenderness when touched by the probe.

Treatment : There is a tendency on the part of gynæ-

cologists to greater conservatism in the management of these cases. The heroic intra-uterine medication is losing favor as a consequence of the untoward results which sometimes followed. Some of the cases will recover without local treatment under a judicious constitutional treatment, such as sexual hygiene, the avoidance of constipation and everything which tends to produce engorgement of the pelvic vessels. An occasional blue pill, saline purgatives, heart tonics, such as digitalis and strophanthus; nerve tonics, as strychnine and quinine. Iron is positively hurtful. If anæmia exist, subnitrate of bismuth and arsenic are preferred. Local treatment: Hot vaginal douche, tampons of glycerine in vagina, correction of displacements. The erosions and so-called ulcers of the os are best treated by solution of nitrate of silver applied by means of absorbent cotton on probe, and carried up into the cervical canal short of the os interum.

Acute Pelvic Peritonitis.—Same grave, alarming, initial symptoms as general peritonitis; chill, high fever, great tenderness on pressure, early tympanitis, limited to lower part of abdomen. The starting point of pain and spot of greatest tenderness indicate locality of greatest intensity. Later, bimanual examination reveals points of resistance or swelling, usually lateral, produced by adhesions of intestine, broad ligament, or uterine appendages. These swellings and areas of tympanitis change seat with intestinal distension, &c.

Acute Parametritis.—Initial symptoms not as violent as in pelvic peritonitis. Fever and pain may be as intense, but tenderness and tympanitis are absent. Severe pain on pressure produced only when uterus is moved or sides touched. A day or two after initial symptoms the uterus is found enlarged transversely where broad liga-

nents leave it. A vaginal examination shows presence of large masses at the sides of the uterus, extending anteriorly or laterally to the pelvic wall. If, with continued or interrupted fever, we find fluctuating points in the masses of exudation, or if the masses rapidly increase in size and become soft, suppuration has taken place.

The treatment is the same for both forms.

In the acute stage: Object to lower the local inflammation—best accomplished by antiphlogistics; leeches to points of greatest pain and tenderness; applications of ice, and absolute rest. If impacted feces suspected, enema of tepid water, and then opium or morphine, or chloral. Saline cathartics are preferable to all others when required.

Chronic Exudations.—After violent pain subsides, instead of cold apply moist heat, poultices, or warm compresses. If exudative masses do not disappear in a fortnight, resorbents, with the continued use of the warm compresses; order warm sitz baths, 92° to 94° F.

In chronic cases, with long-continued fever, pain, and extensive exudations, baths and resorbents of no benefit. In these cases, tonics, good nourishment, and attention to hygiene indicated.

Where masses remain unaltered for months or years, use warm vaginal injections, iodide of potassium internally, oleate of mercury to abdominal walls; paint vaginal portion of cervix with tincture iodine.

Surgical interference indicated in all cases where large abscesses have formed in or about pelvis, whether they originate in peritoneum or parametrium. Open where they approach the surface and where the pus can have a free exit.

Remnants of inflammation in the neighborhood of the uterus and its adnexa may remain for years or for life; and while they may exist without giving rise to the slight-

est pain or sensation, it is of importance to recognize their great frequency in order to diagnose their influence on the health of the woman. Symptoms differ according to the locality and extent of residue—endometritis, too frequent menstruation and irregular hemorrhages, different varieties of dysmenorrhœa, and pain in the intervals. Pain each step or forcible motion calls attention to the fixed uterus. Many feel pressure in the pelvis or dragging sensation in the course of broad ligaments. Bimanual examination causes pain only when uterus is moved. When the uterus has become anteverted, retroverted, or retroflexed, and, as is frequently the case, the tubes and ovaries are matted together and fixed, pain is produced in attempting reposition. Patients worry about their complaint; cohabitation causes pain, and finally disgust.

Vesical Symptoms are present in a few cases, and are variable. In one case there is tenesmus; in another difficult micturition, or different varieties of catarrh.

Rectal Symptoms: Constipation or diarrhœa, abnormal accumulation of gas, abnormal movements, rectal catarrh, &c.

Nervous System.—No marked nervous phenomena observed in women of a healthy nervous system, but where this is more or less diseased the most marked and variable phenomena are presented, especially in individuals of the higher classes.

The most frequent reflex neuroses are constant pressure, burning and painful sensation in sacrum, sensation of burning deep in pelvis or in epidermis of lower abdomen or external genitals, motor or sensory disturbances in lower extremities; sympathetic neuroses—eructations, nausea, vomiting, globus, cardialgia, enteralgia, dyspepsia, anorexia; cerebro-spinal neuroses—spinal irritation, tender

spots in spine, with hyperæsthesia, producing neuralgia of cervical, intercostal, lumbar, or sacral nerves, and coccydynia; psychic disturbances of a mild character; sometimes patients become depressed, dissatisfied, melancholic, hypochondriac, or very irritable.

Treatment: Parametritic and peritoneal cicatrices and the pseudo-membranous adhesions between the pelvic organs cannot be removed by any medical treatment. Even surgical interference is not successful in every case. Cure endometritis as the best prophylactic against frequently recurring parametritic inflammation.

Hot Vaginal Irrigation.—Massage, by stretching cicatricial bands, often has a good result upon the local symptoms, as well as upon the radiating pains and the reflex neuroses; bimanual stretching, using a pair of forceps on the neck to steady the uterus, and with the external hand pull the uterus in a direction opposite to the cicatrix.

Removal of the uterine appendages, though still under discussion, is, we think, justifiable when the tubes and ovaries are considerably diseased.

Hæmatocele.

Symptoms vary with rapidity and amount of hemorrhage. In some cases there have been previous menstrual disorders, but in many the patients have never complained. Usually, at a menstrual period, severe pain is suddenly felt in the pelvis, sometimes so intense as to cause collapse, accompanied with a sense of fear and agitation, nausea, vomiting, and chill; usually a sense of weight or heaviness in the pelvis, creating a desire to make water or go to stool; afterwards febrile symptoms, due to pelvic peritonitis. The lower abdomen is slightly enlarged. The sudden pain during menstruation and the subsequent peritoneal symptoms are important points in

the diagnosis. After the subsidence of pain, fever, and abdominal tension, a tumor behind the uterus is felt on palpation, varying in size with extent of hemorrhage; it may not rise above the true pelvis or extend above the umbilicus. Doughy at first, it feels harder as resorption occurs. Per vaginam is felt a tumor, depressing Douglas' pouch, and varying in size from an apple to a man's head, displacing the uterus forwards and upwards. As the tumor becomes harder rectal and vesical symptoms become more prominent. Swollen abdomen, constipation, and painful defecation, constant symptoms.

Treatment: If seen early, first care to arrest hemorrhage—best accomplished by keeping patient in bed, the application of cold to the abdomen, and cold irrigation of vagina and rectum, the latter best carried out with a rectal irrigator, providing for a return of the water.

Hemorrhage having ceased, we have to combat peritonitis and the anemia which ensues. Patient must remain in bed several weeks, and the cold applications continued until peritonitis is subdued; attention paid to regular evacuation of the bowels and bladder. No medicine, whether administered internally or locally, exerts any influence on the absorption of the tumor. Anemia and weakness met by generous diet and wine.

During the period of absorption patient should be careful of herself, especially during the menstrual period. Prohibit sexual intercourse.

Most cases recover by absorption of the tumor; some break into the vagina or rectum, and some suppurate.

Surgical interference may be called for when a large tumor, causing much pain, has remained unchanged in size for several weeks, or where symptoms of suppuration occur. Make a free incision into the tumor through the vagina, and allow all pus or putrid blood to escape that

will do so without pressure, and wash out the cavity three or four times a day with a two per cent. solution of carbolic acid.

Displacements may be often corrected by relieving the congestion to which they are frequently due, and those due to relaxation of the vagina by astringent injections and tonic treatment. Prolonged repose is hurtful, though rest in the recumbent posture for a few hours daily, after having first assumed the knee-breast posture, will greatly relieve the pain and congestion. Before applying any mechanical support all inflammatory action should be subdued and the displacement corrected. Retroversions are best treated by the Thomas modification of the Smith hard-rubber pessary, and those cases accompanied by relaxed vagina or imperfect perineal support by the Thomas Cutter pessary; anteversions and ante-flexions by Thomas' anteversion pessary. In cases of simple prolapse most comfort is derived from the ring pessary.

Vaginitis—the most common inflammatory affection of the vagina—usually affects the mucous membrane in the form of a catarrh, caused by irritants which come from without or neighboring organs, such as mechanical irritants pessaries, &c.), infection (gonorrhœal, contagion, the decomposable substances from the uterus, &c.), and oxyorides from the rectum. In the acute form, at the very beginning the secretion is scanty and serous, but soon becomes abundant, muco-purulent, and yellow in color. In chronic catarrh the secretion may vary much—sometimes it is abundant, cheesy, or purulent; at others grayish-white and mucoid.

Subjective Symptoms in Acute Catarrh.—Feeling of heat and burning in the pelvis, with difficulty in urination;

often troublesome itching and burning around the genitals. The gonorrhoeal form causes the most violent symptoms. In the chronic form the local difficulties not so marked, chiefly confined to burning and itching about the genitals. Treatment: Suitable diet, rest, care of the bowels, and avoidance of stimulating drinks. If caused by uterine affections they must be treated, and chlorotic and anæmic conditions, when present, must be looked to. The removal of foreign bodies (frequently pessaries) may sometimes suffice. Ordinarily, however, treatment must be directed towards overcoming infection—that is, the destruction of the bacteria in the secretion by vaginal irrigations. Disinfecting agents should be as dilute as possible, yet effective to prevent irritation. At least two quarts of warm disinfecting fluid should be used three or four times a day. The best agents are corrosive sublimate of the strength 1 to 3,000, or carbolic acid 5 to 1,000, or the application of a ten per cent. solution of nitrate of silver through a cylindrical speculum.

Pruritus Vulvæ is an annoying symptom of several morbid conditions—such as pediculi, vaginitis, eczema, erythema, diabetes, herpes, prurigo, new growths, cervical endometritis, oxyuris, and nervous disorders. Treatment should be directed to cause. Of local remedies the best are carbolic acid, chloral, campho-chloral, cocaine, corrosive sublimate, nitrate of silver, and boracic acid.

OBSTETRIC EMERGENCIES.

Abortion.—In the earlier months of pregnancy we may endeavor to prevent this accident and tide the patient on to full term. Where the pains are slight, the os not much dilated, and but little hemorrhage, we should treat by rest in the recumbent posture, sedatives, cool drinks, and

general quietude. Where there is moderate hemorrhage without much pain, we may give acetate of lead, with the addition of a little acetic acid, gallic acid, acid sulph. aromatic, and similar remedies. Where there is much pain along with hemorrhage, opium in some form is the remedy of all others. Counter-irritation over loins and ice over the uterus, though recommended by some authors, are only mentioned to be condemned. Where there is progressive dilatation of the os, violent pains, considerable hemorrhage, and discharge of the liquor amnii, we know that the discharge of the ovum is inevitable, and our efforts should be to hasten its expulsion and relieve the patient from further risk. Here, for the purpose of arresting hemorrhage and hastening the expulsion of the ovum, we may have recourse to the administration of ergot, by mouth or hypodermically, and the insertion of a tampon into the vagina.

To Tampon the Vagina.—There are many contrivances in the shape of bags, with pumps and tubes for inflating with air or water, which will be found described in the books, and for sale by the instrument and supply houses. The trouble with these ready-made appliances is that they are never on hand when wanted, nor can they be bought or borrowed when we are without them. The best tampon to be had may be found anywhere and at any time in the shape of plugs of absorbent cotton tied with a string or light tape. A long roller bandage makes a most excellent tampon also. These may be saturated in slightly astringent solutions, or in carbolized glycerine, and packed into the vagina, either with or without the use of the speculum. In all cases it is much easier and more satisfactory to tampon with a speculum, but where none is at hand it may be well done without this assistance. If no speculum is handy we would suggest that the roller bandage

be used, as it can be managed easier, carrying in one end on the finger and packing it in until the vagina is filled. After a time—from eight to twenty-four hours—if the tampon has been saturated with an antiseptic solution, it may be removed, or we may find it expelled along with the product of conception and the secundines; or it may be necessary to continue tamponing.

The placenta should be removed at once by passing the finger gently into the cervix, and as far up as possible into the womb, and hooking out the secundines. This can be done if the case is seen before firm contraction of the cervix takes place. In this effort the left hand presses down the womb through the abdominal parietes upon the finger which is introduced. If necessary, the entire hand can be introduced into the vagina, under chloroform, and the finger passed up into the uterus. If the case is seen after firm contraction of the cervix the expulsion of the secundines can be left to the natural efforts of the uterus. Sometimes it may be weeks before this is accomplished. If, however, the symptoms become serious by reason of hemorrhage or septicæmia it will be necessary to dilate the os and cervix and remove the retained mass.

Hemorrhage Before Delivery.—This is known as accidental hemorrhage, unavoidable hemorrhage, and placenta prævia, and is due in the majority of cases to the implantation of the placenta, partially or entirely, over the os uteri. It is easy to understand the physiological reason for this hemorrhage when we consider the changing relations of the placenta and its surface attachments. In all hemorrhages of this character the physician should exercise good judgment, sufficient courage, and prompt and decisive action. If the case is far from full term, and the chances favorable, an attempt may be made

to prolong the period and encourage the birth of a viable child. To this end, rest, quietude, sedatives, general astringents, and tampons may be used. If the case is near full term, or serious in character, and the life of the mother is threatened from loss of blood, there should be no hesitancy or useless delay on the part of the physician. Here improper delay becomes criminal. With the finger carefully peel off and detach the placenta partially, rupture the membranes, and encourage immediate uterine contraction if the presenting part of the child is favorable and will come down and engage in the superior strait. If this cannot be accomplished, pass the hand up, turn, and deliver by the feet. Remember the essential treatment in these cases of accidental hemorrhage is to tampon as long as there is a likelihood of tiding the case on; but otherwise to deliver as speedily as possible. *As a caution, never tampon for hemorrhage after delivery; this would be fatal.*

Puerperal Convulsions.—There is no more dangerous or alarming condition to be met with in the practice of obstetrics than that of convulsions during labor. Here, as in post-partum hemorrhage, the physician must not only know his duty, but he must be cool-headed enough to perform it promptly and thoroughly. In all of these cases, whatever may be the pathology—whether there be hysteria or a poisoned condition of the nervous centres—we know that the child in utero is the exciting cause. Our duty is to relieve the enormous pressure upon the brain, to quiet the arterial and nervous system, and to speedily deliver. Do not hesitate to bleed promptly from one or more orifices. Bleed until there is a perceptible effect upon the circulation. Administer chloroform until there is thorough relaxation. Matters may be further aided by a rectal injection of choral hydrate, potass.

bromide, and tinct. veratrum viride. The convulsions being reasonably under control, if necessary encourage or hasten dilatation of the os, rupture the membranes, deliver with forceps at the superior strait, or pass the hand up and deliver by podalic version. Unless you are prepared to treat such emergencies as this in the manner described, you have no right to answer a call to a midwifery case. When the patient returns to consciousness between paroxysms, our treatment need not be so precipitate, as we can rely to some extent upon the administration of remedies for controlling the circulation by the mouth and hypodermically, for in these cases we sometimes find an element of hysteria associated with mild convulsions.

Hemorrhage After Delivery.—This is popularly known as “flooding,” or among the profession as post-partum hemorrhage. There is no circumstance in the life of a physician which will more severely tax his courage and equanimity than to be suddenly confronted by an unexpected case of post-partum hemorrhage. Once or twice we have seen cases in which medical men have allowed women to die while trying to collect their ideas. A woman will bleed to death easily in less than five minutes. It may not be amiss to call attention to the fact that the cause of post partum hemorrhage is due to the partial or complete separation of the placenta and an uncontracted uterus, leaving a multitude of large venous sinuses thoroughly patulous, and through which the mother's life-blood is poured out in an immense and unobstructed stream.

The object of treatment is to free the womb of all clots and other contents, such as pieces of placenta, membranes, &c., and secure its immediate and permanent contraction. The practitioner should ever remember,

with this knowledge before him, that no time should be lost in trying a number of remedies recommended by the text-books. Ergot cannot be relied upon here; there is no time for it to act. Ice over the abdomen may be of more service, but we cannot wait for it. The remedy of all others that will never fail us is the HAND. Promptly pass the hand into the uterine cavity, turn out all clots, &c., and if this stimulation by the hand does not produce uterine contraction, with the other hand grasp the uterus through the abdominal parietes, and thus mechanically compress the uterus and control the hemorrhage. Now we have an opportunity to resort to systemic remedies. The attendants may be ordered to administer stimulants, ergot, turpentine, elevate the hips, and pay attention to other details. We have never known this treatment to fail except in one instance, in which a premature labor occurred in a patient of ours already greatly debilitated by typhoid fever. The child was born before our arrival, but we were present before the separation of the placenta, which soon became partially detached, and a fearful hemorrhage commenced. We immediately separated the entire placenta and removed it, filled the uterus with our hand, and grasped it from without. There was no sign of contraction. The slightest removal of pressure would cause a flood of blood to gush past our wrist and arm. All attempts at producing contraction failing, we sent for a friend, Dr. O. A. Crenshaw, who, while we held on to the woman's life, as it were, mixed up a half pint of Mon-sell's solution of iron, passed the long nozzle of a syringe alongside of our wrist into the uterus, and injected the whole cavity of the uterus with this powerful styptic as we withdrew our hand. The contraction of the uterus and the arrest of hemorrhage was prompt, and the woman finally made a safe recovery.

Labor Cases Requiring Assistance.

Attention to Bladder and Rectum.—At the commencement of labor the attendant should ascertain the condition of the rectum, and if loaded, to empty it by an injection of warm water, or warm water with castor oil and turpentine. Many cases of labor are retarded by a loaded rectum obstructing the descent of the child's head. Later on especial attention should be paid to the bladder. It should be kept empty by the use of the catheter, if necessary, not only for the sake of promoting the descent of the head, but to prevent prolapse or rupture. The presence of polypi, vaginal tumors, and similar obstructions should be noted early and removed or guarded against as labor progresses.

Presentations.—In natural labors we may have, besides the vertex in the first position, presentations of the forehead anteriorly, of the face, and of the breech, all of which may go on to a safe termination by the efforts of nature alone. Occasionally these latter cases are very slow, and sometimes require some assistance. We may occasionally, in the absence of a pain, alter the position of the head, where the forehead presents anteriorly, by embracing the cranium between the first three fingers and thumb of one hand and giving the face an inclination to the right or left ilium, according as its original direction was to the right or left groin. Though, without affecting this alteration of position, the case is a perfectly natural one and requires no assistance except where there is impaction and all progress is stopped, then the forceps may be used. Face cases, as a general rule, require no interference, unless the head becomes arrested or the chin fails to come round beneath the pubic arch, when the vectis or forceps will be required.

Breech Cases.—Where the woman has borne children, and the birth is rapid, no interference is necessary in these cases; but where matters are delayed the safety of the child demands our attention. *The cord* must be protected from pressure to allow the child to live until its head reaches the external world. As soon as the cord can be reached it may be pulled down somewhat to relax it, and the remainder be placed in the hollow of the sacrum, where it will be more out of the way of pressure. Wrap the child's body in flannel and hasten expulsion by traction *during* pains.

To Bring Down the Arms.—If the arms be raised above the head, they must be brought down. It is easier to bring down the posterior one first. Pass two fingers over the shoulder from the back and depress the arm obliquely downwards and forwards across the chest. Then bring down the anterior one in like manner. Unless the arms are carefully brought down in the proper direction the humerus will be fractured.

To Bring Down the Head.—If the face be to the front and the chin much raised from the chest, we must change the position of the head. Pass the first two fingers of the left hand into the mouth and press the chin backwards towards the sacrum and downwards towards the chest of the child. Then pass two fingers of the other hand behind the occiput, grasp the head between both hands, and extract it first downwards and backwards in the axis of the brim, and then downwards and forwards in the axis of the outlet of the pelvis.

Knee or Footling Cases may be managed as breech cases, except that there is still greater reason for delaying the first part of the labor. If one foot or one knee present, the other should not be brought down, for we wish the

larger dilating body in the form of the limb flexed upon the trunk.

Coiling of Cord Around Neck.—When the head is born it sometimes happens that the cord is twisted one or more times around the neck. The attempt may be made to draw down a loop of the cord and slip it over the head, or, if too tight, over the shoulders. When strangulation is threatened the cord should be divided and the vessels secured by ligatures.

Brow Presentations.—These positions require altering by manual interference. Push the brow up and convert the case either into a vertex or face presentation.

Presentations of Superior Extremity.—These presentations of shoulder, elbow, or hand must be attended to promptly. Here the child lies transversely and cannot be born. Spontaneous version has occurred, and children have been born under the above conditions; but such good fortune cannot be relied upon, and we should lose no time in correcting this condition of affairs by turning and causing the vertex to engage in the superior strait, or by delivering by the feet.

Hydrocephalus or Ascites of Fetus.—Here the head or abdomen, as the case may be, should be tapped with a small trocar, allowing an escape of fluid and reducing the size of the fetus so that it can pass through the pelvic canal.

We have given the usual amount of information required in general obstetric practice as a guide in unusual cases. It is presumed that the student or practitioner is acquainted with the anatomical relations of the pelvis and the fetal head, and that he will use his own judgment where book or memory may fail him. There are graver operations in obstetrics than we have mentioned, but in such cases there

is time for more careful thought, study, or consultation. In impacted head or arrest of descent from inertia the forceps should be used. It is needless, we hope, to tell any one that the hand should be introduced and the mother's parts protected while insinuating the blade of the forceps between them and the fetal head; or that the lower or male blade should be introduced first; or that after introducing and locking, we should make examination to be sure that the mother's parts are not caught before making traction; or that in making traction with the forceps we should remember to keep in line of the various axes of the several planes of the pelvis.

Again: Cases will arise in which, from enormous cranial development or pelvic deformity, craniotomy will be demanded, or we may have to perform Cæsarean section for very great pelvic deformity or for ruptured uterus. These cases all require help and consultation, and we should take time to verify the diagnosis and obtain professional assistance.

Troubles After Delivery.

Inversion of Uterus.—This accident is comparatively rare, but when it occurs it is usually very soon after the birth of the child. It may occur spontaneously, but is more often due to improper traction on the cord when the placenta is attached. It may be partial or complete inversion. In the complete form the uterus is turned completely inside out, and extends beyond the os externum. It then presents itself as a globular elastic tumor, with a bright red, rough, bleeding surface. With the descent of the uterus the woman experiences a sensation as if a second child were coming into the world, and is immediately afterward attacked with vomiting, syncope, and alarming prostration, accompanied frequently with profuse hemorrhage.

The uterus should be returned *without delay*. Compress the tumor firmly with both hands ; then push the fundus upwards into the pelvis, in the direction of the vaginal canal, by means of the fingers placed in the form of a cone. If the placenta adheres to the uterus, it should be returned with the uterus. If it be impossible to return it, it may be separated. After the uterus is returned the hand should be kept in its cavity until it is expelled by contraction of the organ. Should the first attempt at returning the uterus fail, the rectum and bladder should be emptied and further efforts made to restore the organ to its proper place.

Nervous Shock After Delivery.—Some women—especially those of hysterical temperament—present symptoms of severe shock after delivery. They appear much exhausted ; are liable to attacks of syncope ; there is often severe headache, and much intolerance of light and sound. The pulse is soft and compressible ; the countenance pale and anxious ; the tongue moist and tolerably clean ; the skin soft and perspirable. The best remedy is an opiate, with a diffusible stimulant ; and this may be repeated, if necessary, in smaller doses every four hours. The most perfect repose should be enjoined. The head should be placed rather lower than usual, and the horizontal position strictly maintained.

Sleeplessness After Delivery.—This is frequently a troublesome sequence to delivery. Absolute quiet should be insisted upon. Tea and coffee should be forbidden, and an opiate or chloral or bromide of potassium should be administered.

Retention of the Urine After Delivery.—This is sometimes the consequence of a tedious labor, and arises from the swelling of the vaginal orifice and meatus urinarius,

together with some loss of power in the bladder. Warm fomentations to the vulva may be tried. If these do not produce the desired effect, the catheter must be used. If the inability continues, tonics and diuretics should be given. The following is a very excellent prescription :

℞ Tinct. ferri chlorid
 Spts. æther. nit. aa ʒij.
 Aquæ ad. ʒviii.
 M. S.—Tablespoonful three times daily.

Deficiency of the Lochial Discharge.—This may be deficient in quantity, or may entirely disappear within two or three days after delivery. This is not unusual after the birth of first-born children, and need occasion no alarm, provided it be unaccompanied with febrile symptoms. Warm fomentations should be applied to the vulva, and the vagina should be syringed daily with warm water. A moderate dose of quinine and capsicum will very frequently restore the discharge.

Excessive Lochial Discharges.—In every case when the lochia may be excessive in quantity, or may last beyond the usual time, producing much debility, the proper treatment is to enjoin rest, and give tonics, such as quinine and iron and to build up the system generally. Ergot and astringent injections are sometimes useful. Iron tonics come in well, and aromatic sulphuric acid is an excellent agent.

Offensive Lochial Discharges.—We sometimes find the lochia exceedingly offensive, and changed in quantity and color. This sometimes may depend upon the presence of putrid matters in the uterus, such as decomposed portions of the placenta, clots, &c. The vagina should be thoroughly syringed two or three times daily with warm

water, or with weak disinfectant lotions. The following are good formulæ :

R Liq. sodæ chloratæ. $\bar{5}$ ss.

Aquæ. destil. ad Oj.

M.—Ft. lotio.

R Liq. potass. permanganat . . . $\bar{5}$ ss. .

Aq. destil. ad. Oj.

M.—Ft. lotio.

Lacerated Perineum—Slight lacerations of the perineum are common, and require very little attention except cleanliness; but where the lacerations extend through the sphincter ani, and sometimes even through the recto-vaginal septum, we have a serious and unfortunate case. In the deeper lacerations the parts should be thoroughly cleansed antiseptically, and immediately united by a sufficient number of deep sutures of silver wire or silk, and protected as much as possible from the discharges as they flow down. The patient should be kept perfectly quiet in bed, resting upon one side or the other, with the limbs tied together.

Retracted Nipples.—In some women the nipples are so retracted and short that the child cannot seize them. They should be drawn out by means of an air-pump immediately before putting the child to the breast. The use of a nipple shield will sometimes enable the child to get at the milk. A very excellent substitute for the air-pump may be constructed in the following way: A decanter or soda water bottle is to be filled with hot water. The bottle is then emptied, and the nipple immediately inserted into its mouth. As the air cools within the bottle a vacuum is formed, and the nipple is nicely drawn out.

Sore Nipples.—This is a very painful affection to women, and in endeavoring to save themselves pain they

often allow themselves to get a rising breast. The soreness depends upon the presence of excoriations, chaps, fissures, or even deep ulcers around and about the nipple. Ordinary excoriations may be treated by astringent lotions, such as alum, sulphate of zinc, &c. Excoriations about the base of the nipple may be painted with collodion, and thus protected; but if there are very deep fissures or ulcers the application of nitrate of silver or the ointment of nitrate of mercury will be likely to do the most good. The strength of the silver lotion should be about ten grains to the ounce of rose water.

Inflammation of the Breast.—Inflammation of this large gland is easily excited, and should be carefully guarded against. It is accompanied with febrile excitement, great pain, soreness and redness, and temporary suspension of the secretion of milk. It quickly terminates in suppuration if neglected. As far as possible, the breast should be relieved of its engorged condition by stroking out as much milk as possible, by the exhibition of saline purgatives, and the enjoinder of perfect quiet. Inflammation of this organ, at its commencement, should be treated by the application of ten or fifteen leeches to the part affected, or, if there is much fever, by a moderate blood-letting. Flax-seed meal poultices are recommended, though we ourselves are much inclined to give preference to moderated pressure, cooling applications, or lead lotions, and attempts to relieve the breast of its superabundant milk. Of course, when pus is formed its speedy evacuation is indicated.

Puerperal Fever.—This is one of the most unfortunate accidents following delivery. From the inflammatory lesions that are present in various cases these fevers have been called metropéritonitis, hysteritis, uterine phlebitis, &c. The usual period of invasion is about three days

after delivery. The especially prominent symptoms are rigors, followed by severe headache, fever, quick and often feeble pulse, suppression of milk, and lochia, pain and tenderness on pressure in the uterine region, extending over the whole abdomen. The woman loses all interest in her child, and her countenance betokens anxiety and great prostration of strength. Besides the above symptoms there are generally delirium, vomiting, tympanites, and sometimes diarrhoea. Unfortunately this disease too frequently terminates in death. The cases most amenable to treatment appear to be the more acute forms of peritonitis. This somewhat resembles ordinary peritonitis, and may be treated similarly by bleeding, leeches, mercurials, opiates, and warm fomentations. In other forms, in which the stomach and liver seem involved, heavy purgation seems to do the most good. For this purpose calomel is especially indicated. To summarize, the most important remedies are mercurials, opiates, and possibly stimulants.

The First Care of the Infant.—As the child is received into the hands of the accoucheur it should be carefully laid upon the bed and the cord properly tied. If no efforts at respiration are made by the infant it will do good to allow the cord to bleed a little before tying it. Usually a smart slap or sudden dash of cold water in the face, or a little brandy and water wiped over the face and in the lips, will start the new-comer off with a vigorous squall. In the event of failure in this direction artificial respiration may and should be practiced.

To Tie the Cord.—The ligature for this purpose should be neither very small or too large. A cord made of several strands of silk thread well twisted and waxed, and tied in a secure double knot, is the best. Small silk braid will answer very well. Indeed, anything will do which

will properly constrict the vessels of the cord without cutting through prematurely.

To Wash the Baby.—The child is usually covered with a cheesy-looking, sebaceous substance, which will not yield to soap and water, greatly to the surprise of the uninitiated. Grease the infant well with lard, oil, or some oleaginous compound, and then proceed to wash it.

The Dressing for the Cord.—This is considered a matter of great importance by old women and midwives, and many are the exact devices for covering and protecting the cord. The most common plan is to take a small square piece of linen, cut a hole through its centre, pass the cord through this hole, and fold the linen over it. A simple and better plan is to take a small strip of muslin or linen, grease it well with lard or cosmoline, and lay it upon the child's abdomen. Then lay the stump of the cord upon this and cover with some old linen or absorbent cotton, and secure the whole with a light flannel bandage around the abdomen. The cord usually falls off within about a week's time.

Hemorrhage from Cord.—Sometimes we have troublesome and continued hemorrhage from the umbilicus after the separation of the stump of cord. Sometimes this may be very easily controlled by a little compress and bandage, or by the use of the ordinary styptics, such as tannin, alum, Peruvian bark, &c., but it is occasionally necessary to resort to the application of persulphate of iron or caustic.

INFANT FEEDING.

There is probably no question connected with medicine that has given more trouble to the practitioner than that of properly feeding the infant for the first year or two of

its existence. When we consider the immense mortality in early life, and the fact that nearly three-fourths of such cases are the result of improper or insufficient food, the thought is an appalling one. No one with common reason will deny the fact that a full amount of healthy human milk is the very best food for an infant until it can masticate and digest other food. But here we are confronted with grave difficulties, for this fortunate circumstance of a full amount of human milk, and of the proper quality, is the exception rather than the rule. The child is constantly increasing his capacity for more and better food, while the mother's supply under the steady demand gradually grows less in quantity and inferior in quality. Therefore, where the milk is thus lacking we are compelled to feed the child artificially to keep it from starving, and unfortunately we, in endeavoring to save life by feeding, give improper food and bring on disease.

There is not a physician anywhere who has not felt his utter helplessness when confronted by cases of infantile gastritis enteritis, and starvation, the results of trying to feed these poor little ones artificially. When the mother's milk fails it is usual to resort to cow's milk, properly diluted and sweetened to somewhat represent the human milk, or to try some of the many sugary and farinaceous foods upon the market.

Just here we will call attention to a few facts based upon physiology, which will explain why so few artificial foods answer.

As to Cow's Milk.—First, if we could get it always pure, fresh, and free from contaminating germs and commencing products of decomposition, it would be better for the infant who was compelled to live upon cow's milk alone. But this is impossible. One has only to pay the slightest attention to the milk supply of our cities to see

that our little ones are in constant peril when dependent upon a varied and uncertain grade of milk, drawn from cows fed on all manner of garbage, and when hot and panting from heat or long drives. This milk is then carelessly handled, receiving dust, germs, and other impurities, and put in hot cans, driven in the sun over rough, jolting roads and streets, and finally delivered to the consumer. Good milk, gotten under the best conditions, is very indigestible for young babies by reason of its abundance of casein, which is very apt to form into hard curds. But it is absolutely dangerous to rely upon such as we have mentioned above.

Returning to the physiological fact influencing the digestion of certain foods consisting of starchy, farinaceous compounds, it should be remembered that the starch in our food is intended to be converted into glucose by the action of the saliva, and that in the infant this conversion of starch is impossible until the eruption of the teeth fully arouses the glands to a secretion of true ptyaline. Therefore we find no rational grounds for placing a child at the mercy of so many of these starchy, cane-sugar "infants' foods."

We would call attention here to two products from a reliable and trustworthy house that we believe are the nearest possible approaches to healthy human milk, and that can be safely relied upon to properly nourish a child and support it entirely. Physiologically these preparations are correct, and in practice in our hands they have done all claimed by the manufacturers.

We refer to *Lacto-Preparata* and *Carnrick's Soluble Food*, manufactured by Messrs. Reed & Carnrick, of New York.

These gentlemen have devoted much time and attention to the production of a food for infants made entirely from

cow's milk, with the constituents arranged so as to correspond very closely with human milk, and placing the same in hermetically sealed cans, with the constituents perfectly sterilized. This milk is all obtained within a short distance surrounding their factory at Goshen, and is evaporated in vacuo a few hours after being taken from the udder of the cow. Previous to its evaporation about thirty per cent. of the casein is digested, and the action of the pancreatine on the remaining portion destroys its tough character, so that it will coagulate only in soft, flocculent curds. This is practically an all-milk food, the only difference being the substitution of cocoa butter for the milk fat in consequence of the unstable character of the latter. This was done by the advice of Prof. Attfield, London, who devoted considerable time to investigations on the subject in the interests of this house.

His careful experiments led him to state that he believed cocoa butter would perfectly take its place, as its analysis shows that it is practically identical with the fat of cow's milk, less the constituents that produce rancidity. He also stated that in some respects it would be found superior to milk fat, as it would be free from all possible germs that are found in much of the fat of cow's milk. Therefore cocoa butter has taken the place of milk fat in Carnrick's soluble food for more than a year and a half, and since then there have been no complaints of its keeping qualities. This last production is called Lacto-Preparata, and we believe that it is the most perfect food that can be produced for the artificial feeding of infants, and we think it removes all objections raised to the different methods thus far devised.

The manufacturers have a new method of sterilizing their foods and placing them in hermetically sealed cans

without coming in contact with the air or hands of the operators, everything being done by machinery.

Lacto-Preparata is more especially adapted for infants from birth to six months of age, after which soluble food is probably better adapted. *Soluble Food*, as perfected, contains $37\frac{1}{2}$ per cent. of the solid constituents of milk, $37\frac{1}{2}$ per cent. of wheat with the starch converted into dextrine and soluble starch, and 25 per cent. of additional milk sugar.

THERAPEUTIC CLASSIFICATION OF DRUGS.

The prescriber will find this a most useful table to have handy for consultation where memory fails him. It has been carefully compiled up to the latest moment, and we have used both Professor H. C. Wood's excellent work on therapeutics, and Saunders' Question Compend in preparing this *resume*.

Systemic Remedies.

ASTRINGENTS.

Vegetable.—Tannin, gallic acid, catechu, kino, hæmatoxylin, rhatany, red-oak bark, sumach, port wine.

Mineral.—Alum, lead, bismuth, zinc, copper, silver, and the various preparations of these metals.

TONICS.

Simple Bitters.—Quassia, simaruba, gentian, barberry, boneset, dogwood, columba.

Peculiar Bitters.—*Prunus Virginiana* cort., cinchona, and its preparations and alkaloids.

Aromatic Bitters.—Chamomile, snakeroot (Virginia), cascarilla, angostura.

Mineral Tonics.—Iron and its preparations, arsenic mineral acids, phosphorus.

MEDICINES AFFECTING THE CIRCULATION.

Heart and Vascular Stimulants.—Alcohol, ammonia, ether, atropia, caffein, digitalis, strophanthus, sparteine, strychnine, cimicifuga.

Heart and Vascular Sedatives.—Acid hydrocyanic dil., antimonials, aconite, veratrum viride, gelsemium, pulsatilla, &c.

MEDICINES ACTING ON THE BODY BY INFLUENCING NUTRITION, TISSUE WASTE OR REPAIR, &c.

Digestants.—Pepsin, pancreatin, vegetable pepsin (papain), malt extracts.

Alteratives.—Preparations of mercury, arsenic, iodine, iodides, cod-liver oil, hypophosphites, phosphates, calcium sulphide, sarsaparilla, cascara amarga, stillingia, bitter sweet, &c.

MEDICINES ACTING PRIMARILY ON THE NERVOUS SYSTEM.

Excito-Motors.—Strychnia, Ignatia, rhus toxicodendron.

Depresso-Motors.—Calabar bean, potass. bromid., chloral hydrat, gelsemium, tobacco, cyanides, &c.

Hypnotics.—Opium, hyoscyamus, paraldehyde, urethan, chloral, humulus.

Mydriatics.—Belladonna, stramonium, duboisia, erythroxylon.

Anæsthetics.—Nitrous oxide, chloroform, alcohol, ether, bichloride of methyl, bromide of methyl.

Antispasmodics.—Musk, castor, assafoetida, camphor, valerian, Hoffman's anodyne (co. spts. sulph. ether).

DRUGS ACTING ESPECIALLY UPON CERTAIN ORGANS OR FUNCTIONS.

Emetics.—Ipecac, bloodroot, apomorphia, mustard, squill, powdered alum, sulphate of copper, turpeth mineral (yellow sulphate of mercury).

Cathartics.—(Laxative) oatmeal, tamarinds, fruits, sulphur, magnesia, &c. (Purgatives) calomel, castor oil, rhubarb, aloes, senna, euonymus, and salines. (Drastics) colocynth, gamboge, scammony, elaterium, croton oil, may apple, pill. cathartic co.

Diuretics.—Digitalis, squills, nitre, potash and its preparations, Buffalo Lithia Water, turpentine, buchu, pareira brava, chimaphila, juniper, copaiba, &c.

Diaphoretics.—Liq. acet. ammonia, jaborandi, ipecac and nitrate of potash, spts. nitre.

Expectorants.—Tartar emetic, ipecac, cubebs, tar, senega, ammonium chloride and carbonate, benzoic acid, squills, balsamic preparations.

Emmenagogues.—Apiol, rue, savin, myrrh, camphor, tansy.

Oxytocics.—Ergot, quinine, cotton root, corn ergot.

Demulcents.—Gum arabic, gum tragacanth, slippery elm, Iceland moss, sassafras pith, barley.

MISCELLANEOUS REMEDIES.

Antacids.—Soda, lime, potassium carbonate, &c.

Anthelmintics.—Pink root, wormseed, male fern, pumpkin seed, santolin, turpentine, and castor oil.

Disinfectants.—Chlorine, potass. permanganate, iodine, lime, sulphurous acid, thymol, carbolic acid.

HYPODERMIC MEDICATION.

Medication by the hypodermic syringe should be resorted to under the following conditions : Where stomach is irritable and will not retain the drug ; where the patient cannot swallow, either from obstruction, paralysis, or insensibility ; where we wish to give a minimum dose ; where we desire prompt action of the remedy ; where we wish greater local effect, as in obtunding pain.

As a general rule, the dose of a drug for hypodermic use should be *about half* of the dose used by the mouth. The point of introducing the remedy may be selected according to circumstances. If there is a general effect to be produced, we may select the inner portion of the arm or thigh. If we wish to relieve local pain, it is well to inject along the course of the affected nerve, or over the painful spot. For abdominal pain, or where we wish to produce vomiting, we inject over the abdomen.

The Method of Injecting.—The principal care should consist in selecting the proper site for introducing the remedy, having clean antiseptic needles, fresh solution (or some of the excellent, handy, and accurate little tablets made by our chemists for the purpose—Messrs. Sharp & Dohme, of Baltimore, prepare a full line of these goods, and they are pure and reliable), driving all air out of the needle before injecting, and finally properly injecting the fluid. The skin should be lightly pinched up, and the needle introduced with a slight rotary motion well through the skin in a slanting direction into the cellular tissue. The piston of the syringe should be slowly and gently pushed down, driving the fluid out into the surrounding tissue ; and after withdrawing the needle, the finger should be held over the point of puncture for a minute to prevent any escapement of the injected fluid, and at the

same time a little manipulation of the spot will further hasten the absorption of the fluid. Care should be taken to avoid injecting into a vein, as alarming symptoms have known to follow the too rapid introduction of morphia into the circulation. When this accident does occur, as is indicated by faintness, heart failure, cyanosis, and other pressing symptoms, a cord or ligature should be placed around the limb to retard any further absorption from the point of injection. Stimulants, belladonna, atropia, and electricity may be used.

Another caution to be observed is the possibility of having the hypodermic dose increased or intensified by opium in some form *previously administered*. Nearly all of the fatal cases following morphia hypodermically have been traced to the fact of a previous dose or hypodermic of opium or morphia. The physician in all cases should *know* how much morphia his patient has in him when he is using his hypodermic syringe. If called to see a patient, and we are informed that he has been taking laudanum or other opium preparation, we are very careful about injecting morphia under his skin, or after one good hypodermic we wait sufficiently long before repeating the dose. Properly used, the hypodermic method is exceedingly valuable and perfectly safe, and we would urge the young or old practitioner to note the above points in *all* of his cases.

We give the following as embodying the principal conditions under which hypodermics have been employed :

Abortion has been caused by hypodermics of pilocarpine. This should enforce caution.

Arrest of Perspiration.—Pilocarpine, the alkaloid of jaborandi, will cause more or less profuse sweating, according to the amount injected beneath the skin.

Bubo has been aborted by injecting carbolic acid into the centre of the swelling.

Carcinoma.—Acetic acid—one part to three of water—injected into the cancer has proved successful in shrivelling the tumor, and thus obviating an operation.

Chloroform Poisoning.—One-tenth grain of digitaline hypodermically, followed an hour afterward with one-tenth grain of atropia in a similar manner.

Congestive Chills.—Ten drops of tincture of belladonna hypodermically every fifteen minutes until the pulse becomes distinguishable succeeded where the patient was unconscious and unable to swallow.

Croup.—Sulphate of atropia—one per cent. solution—injected into the neck, on a level with the pneumogastric ; three drops, repeated in four hours.

Dysentery.—Morphia hypodermically, in one-third-grain doses, has been found more rapid in relieving tenesmus than any other opiate.

Erectile Tumors have been successfully treated by injections of perchloride of iron and chloride of sodium in solution ; the tumor to be surrounded by a ring.

Foreign Body in the Esophagus.—Threatened strangulation from impaction of the gullet has been promptly relieved by inducing vomiting. For this purpose inject hypodermically one-tenth grain apomorphia.

Goitre has been successfully treated by subcutaneous injections of ergotin ; one-third grain, gradually increased to one grain.

Hemoptysis.—Sclerotinic acid—a five per cent. solution—injected in the neck or arm. Ergotin may also be used.

Hemorrhages.—Hæmoptysis, hæmatemesis, and uterine hemorrhages have all been arrested by hypodermics of ergotin. If there is pain, add morphia.

Hernia is more easily reduced by giving a hypodermic injection of morphia, with or without atropia.

Hiccough.—In obstinate cases resisting all other means, three-eighths grain of chloro-hydrate of pilocarpine, hypodermically, quickly proved successful.

Infantile Convulsions.—Morphia subcutaneously, with inhalations of five drops of nitrite of amyl immediately following, have proved successful. We would here caution against the indiscriminate use of morphia in the case of children.

Membranous Croup.—Equal parts of water and solution perchloride of iron injected into the trachea, piercing the needle through just below the thyroid cartilage, dissolves the membrane and assists its expectoration, and is thus a substitute for tracheotomy.

Nasal Polypus.—Carbolic acid one part, glycerine four parts. Inject twenty drops into the tumor by means of a hypodermic syringe.

Night Sweats.—Atropia has given good results in injections of about one-fortieth grain at bed-time.

Obstructions of the Bowels.—Aloin has been used with success subcutaneously to move the bowels.

Opium Poisoning.—Rapid recovery is reported to have followed warm hypodermics of fluid extract coffee in thirty minim doses. Caffein citrate, and sulphate of atropia may also be used.

Puerperal Convulsions.—Veratrum viride, two to four drops of the tincture subcutaneously, to keep the pulse

down to about 60. A pilocarpine (two per cent.) solution is also recommended.

Retention of the Urine, from paralysis of the bladder, accompanying typhus, variola, and hydrocephalus, has been promptly overcome by hypodermics of ergot in the fossa behind the great trochanter.

Snake Bites.—Ammonia, brandy, carbolic acid, or salicylic acid are all recommended, hypodermically, in the case of snake poisoning, and have been with benefit injected into a vein.

Strychnia Poisoning.—Caffein, one grain hypodermically; chloral, alcohol.

Surgical Shock.—Six grains quinine with one-third grain morphia hypodermically.

Ununited Fractures.—Glacial acetic acid, five to ten minims between the ends of the bones with hypodermic syringe. Iodine has also succeeded when used in the same way.

Urticaria.—Saturated solution of bisulphite of soda injected directly into the part affected.

We append a few formulæ for those who are compelled or prefer to prepare their own solutions for hypodermic use :

℞ Apomorphiæ gr. j.
Aquæ puræ ʒ iiss.

M. One minim represents $\frac{1}{150}$ gr. Dose 5 to 20 mins.
Very active emetic.

℞ Atropiæ sulph. gr. j.
Aq. puræ ʒ xv.

M. One minim = $\frac{1}{900}$ gr. Dose 5 to 20 mins.

R	Caffein	grs. x.
	Alcohol	$\overline{3}$ iss.
	Aq. puræ	$\overline{3}$ iss.

M. One minim = $\frac{1}{15}$ gr. Dose 4 to 18 mins.

R	Digitalin	gr. ss. ($\frac{1}{2}$)
	Alcohol	$\overline{3}$ ij.
	Aq. puræ	$\overline{3}$ ij.

M. One minim = $\frac{1}{10}$ gr. Dose 4 to 8 mins.

R	Ergotin (watery ext.)	gr. xx.
	Aq. destil	$\overline{3}$ j.

M. One minim = $\frac{1}{5}$ gr. Dose 5 to 20 mins.

R	Curaræ (woorara)	gr. $\frac{1}{4}$.
	Aq. destil	$\overline{3}$ iv.

M. S. 5 to 15 mins.

R	Duboisia mur.	gr. ss. ($\frac{1}{2}$)
	Aq. destil	$\overline{3}$ j.

M. S. 5 to 16 mins.

R	Hydrarg. chlor. corrosiv	gr. iij.
	Sodii chlorid	gr. iij

Dissolve the above in a drachm and a half of distilled water, filter and add enough aq. destillat to make $\overline{3}$ x. One minim = $\frac{1}{200}$ gr. Dose 3 to 10 drops, which should be injected *under the skin of the back* on either side of the spinal column.

R	Pilocarpin. mur.	grs. iij.
	Aq. puræ	$\overline{3}$ iv.

M. One min. = $\frac{1}{30}$ gr. Dose 10 to 20 mins.

R	Strychnia sulph.	gr. j.
	Aq. destil	$\overline{5}$ j.

M. One min. = $\frac{1}{100}$ gr. Dose 4 to 15 mins.

ELECTRICITY IN MEDICINE AND SURGERY.

With the present advance of science no physician can afford to be ignorant concerning the ordinary uses of electricity and its application in medicine and surgery. And yet it is rare to find a physician possessing the most elementary knowledge of the subject. For this reason we will introduce a sufficient amount of information to enable the physician to properly grapple the subject and make a sensible application of this important agent in the treatment of disease, or in surgical cases requiring it.

Galvanism is the current produced from the action of an exciting fluid upon two dissimilar metals, such as zinc and copper, zinc and carbon, etc.

Faradism is the current of a galvanic battery passed through an induction coil and interrupted.

Galvanism gives the constant current, the electrolytic current, and the potential current, and is used both for electrolysis—chemical decomposition—and for general diffused applications. Faradism is used to stimulate the nervous and muscular systems by shocks. You cannot practice electrolysis with a Faradic current.

The *Poles* of a battery are the ends of the wires leading from the two terminals of the battery. The *negative pole* is always from the element most actively acted upon in the battery, which is the zinc in zinc-carbon, or zinc-copper battery.

The *positive pole* is just the opposite of the above, and is found leading from the carbon or copper.

The *negative pole*, or electrode, never corrodes or oxidizes the tissues of the body, and is the pole for treating strictures and other troubles of the mucous surfaces or sinuses. Under the action of the current, hydrogen and alkalies and electro-positive elements of the body cluster

around the negative pole and keep it bright and free from corrosion. The *positive pole* draws to it oxygen and acids and will oxydize the tissues and become corroded. It should be rarely used as a metal electrode in treating diseases, but should be used as the sponge electrode to the surface.

An *Electrode* is the sponge or instrument connected with one or both of the poles of a battery and in contact with the patient's body.

An *Electrolyte* is a substance capable of being acted upon or chemically decomposed by the galvanic current.

Anode—the method or *direction* in which electricity enters the body—the positive pole.

Cathode—the opposite of anode—negative pole.

Ascending or Descending Currents are simply the passage of a current from the periphery of a nerve to its centre or origin, and *vice versa*. The positive pole furnishes the current that passes towards the negative electrode, wherever it may be placed; and hence, if you know your positive pole from the negative, you always know the *direction of your current*. It can be seen that one who simply puts two sponge electrodes on a patient without a proper knowledge of the ascending or descending currents is as likely to do harm as good.

Besides galvanism and faradism, we have also franklinic or static electricity—known as frictional electricity. In practice the galvanic and faradic are the chief forms of current used.

Special Features of the Galvanic Current.—A thorough understanding of the peculiar features of the galvanic current, especially as contrasted with the faradic, is absolutely necessary.

A plate of zinc and a plate of carbon, each having a wire attached, placed into a cell containing some acid-

ulated or exciting fluid, and not touching each other, constitute the simplest form of galvanic cell or battery. Now when these terminal wires are united a current of electricity commences to flow, leaving the cell by way of the wire attached to the carbon plate, passing along this wire and around to the zinc plate in the battery, thus making an electric circuit. Now this current always flows *in the same direction*—is constant, without interruption or shock; and when a number of such cells are coupled for *intensity* it will exhibit its chemical powers and *break up electrolytes into their atomic elements*. Now note the faradic current. If a bundle of soft iron wire, or a rod of soft iron, be wound around from one end to the other with insulated copper wire, and this same galvanic current be passed through this coil of wire, it renders this core of soft iron magnetic. Now if this coil of wire is insulated, and another coil of wire wound over it, we will have another current *induced* in this second coil whenever the flow is suddenly stopped in the first coil. This current flows in the *same direction* as that of the inner or first coil, but when the current is re-established in the first coil a momentary wave will pass through the second or outer coil, but in an *opposite direction* to that flowing in the inner coil.

This is the principle involved in all *faradic machines*, and this is the *induced* or interrupted current. It is useless for any chemical or electrolytic purposes, is an *interrupted* current, and flows both *backwards* and *forwards*. It is used for stimulating the nerves and muscles in atrophy, paralysis, &c., and its range of usefulness is quite limited, while its injudicious use may do much harm.

Going back to the simple galvanic cell, we will point out the relative value of QUANTITY and INTENSITY. If in the simple cell that we have described the plates of

zinc and carbon should be one foot square, we would get a large *quantity* current. Such current would crowd along on a wire offering much resistance, and heat it or burn it up; but it would possess little or no *intensity*—it would not decompose a single drop of water into hydrogen and oxygen. If, on the other hand, these plates of zinc and carbon were cut up into strips one inch each in width, and twelve smaller cells made, which would expose exactly the same amount of surface as the large cell, and these elements then connected, so that the current from the zinc of the first cell would flow to the carbon, and from that carbon on to the zinc of next cell, and so on through the whole series, we would have a galvanic current as before, but of very little quantity, while it would possess high *potential* or *intensity*. This current would *not heat* the wire or burn, but would very rapidly decompose water or the morbid or healthy tissues of the body.

Upon the above principles all applications in medicine and surgery depend, and if our readers will closely study these facts they will be able to pursue the study with satisfaction, both theoretically and in practice.

THE TREATMENT OF URETHRAL STRICTURE BY ELECTROLYSIS.

The principles upon which the scientific and successful treatment of stricture is based are these: All electrolytes, when brought within the galvanic circuit, are decomposed, hydrogen and alkalies going to the *negative* pole, oxygen and acids going to the *positive* pole. The simplest electrolyte is water, and under electrolytic action evolves at the positive pole oxygen, and at the negative pole hydrogen. If a solution of iodide of potassium be subjected

to the influence of the galvanic current, the iodine with the oxygen appears at the positive pole, and the alkali with the hydrogen at the negative pole. In a solution of common salt chlorine is evolved at the anode and oxide of sodium at the cathode. Dr. Rockwell, in his work entitled "Electricity as Related to Medicine and Surgery," says: "When it is remembered that in electrolysis of every compound substance the elements evolved are definite in quality and quantity, as well as electro-chemical equivalents of each other, it can be readily understood that electro-surgery offers as great, if not greater, possibilities of exact and uniform results as electro-medicine." It can be readily understood that the tissues of the human body, composed, as they are, largely of water and salts, are very excellent electrolytes, and are readily decomposed and broken up into their elements by the galvanic current.

In the treatment of these cases we need a good steady galvanic battery of from twelve to twenty-four cells, and suitable urethral electrodes. The battery may be a zinc-carbon, Leclanche, chloride of silver, or even a good gravity battery. The zinc-carbon acid battery is by far the best. The best electrodes are firm bougies or sounds insulated with hard rubber, terminating in an acorn-shaped metal bulb. These are of various sizes, suitable for working all sizes of strictures. These electrode bougies are attached to the *negative* pole of the battery and passed down within the urethra to the point of obstruction or stricture. *Never use anything but the negative electrode in the urethra.* The circuit is completed by attaching a covered carbon electrode to the *positive* pole and placing it in the patient's hand or on the thigh, or other part of the body. Galvanometer, rheostat, and milliampere-meter are of no real practical value. They

are not exact, nor do they convey the information to the operator that he wishes. The best guide in regulating the current is the *sensations of the patient*. This is a *meter* that will never fail you. Start with your battery at zero and gradually add on cell by cell until the presence of the current is perceptible to the patient and free from pain. A gentle warmth or tingling either at the negative or positive pole is all that is necessary. Usually from six to twelve cells will be sufficient for ordinary work. Do not expect to do too much at once, but use weak currents and work at long intervals, allowing ten days to three weeks between seances. From five to fifteen minutes is long enough to keep a patient under the current. Hold the electrode in contact with the stricture until it glides through, if you have to give several seances before you succeed. Select such electrode as is a little larger than the stricture, using larger and larger ones as you gain in decomposing the stricture.

The intensity of the current may be graduated and modified (in addition to the regulation effected by the connectors, rheostat, &c.,) by the *far or near point* at which the connection or completion is made on the surface of the patient's body. For example, when the bulb of the electrode is at the seat of the stricture, and say six or eight cells are in use, the positive electrode being in the palm of the patient's hand, he may not be sensible of the action of the current; but if the sponge be placed on the thigh, or in the groin, or over the pubic region, it will be found that the current is appreciable without increasing the number of cells, and the stricture may be worked with this number of cells; and in our hands the most successful and satisfactory results have been obtained by using the fewest possible number of cells that can be made to decompose the stricture.

Whatever strength of current that is positively perceptible to the patient, and short of pain, *is the proper strength to use in each case*, whether such current be produced from one cell or from one hundred cells. The susceptibility of the patient to the action of the current, which is only known by the sensation which he experiences when the current is passing, is the only guide to us in regulating the intensity. Such a current as this will not *burn*, or *cauterize*, will not produce pain or inflammation, but will, with positive certainty, reduce the tissues in contact with the negative pole to their original elements, causing the salts of the blood or alkalies and the hydrogen to separate from their combinations and cluster around the bulb of the negative electrode, while the oxygen and acids seek the positive pole. And what is the result? The tyro in chemistry or medicine will answer: "The stricture is *absorbed*." Exactly so; without pain, without cauterization, but, as it were, by a chemico-vital process the stricture is absorbed, and the electrode passes readily into the bladder without force, but simply by its own weight, *because there is nothing left to obstruct its passage*.

Complications Arising in the Treatment of Stricture of the Urethra by Electrolysis

To any one who expects to simply work all strictures four or five times with an electrode bougie and look for a cure, we would say that disgust and failure will surely attend his efforts, it may be, in the very first case treated. Stricture may be aggravated and the patient greatly harmed by the injudicious and inexperienced use of the galvanic current. There is a time when the current may, and should be, used, and also a time when it *should not* be used. These points must be decided by the experience and judgment of the operator. And to aid the beginner

we will point out some of the troubles likely to be met with.

Inflamed strictures will be met with, and the pain experienced upon the passage of any instrument will be out of proportion to the amount of resistance offered by the mere presence of the adventitious tissue or hypertrophied mucous membrane. A stricture presenting such features is *not* in a suitable condition for the electrolytic treatment. The remedy consists in local treatment of this condition. Here the diet of the patient must be regulated, the urine rendered bland and alkaline or neutral in character; the bowels should be kept moderately open, so as to avoid any sympathetic irritation in the urethra from an overdistended rectum. Granular effervescent citrate of potash, bicarbonate of potash, tr. gelsemii, bal. copaibae, flax-seed tea, and such agents will come in well. Deep urethral injections of two to five grain solutions of nitrate of silver, sulphate of zinc, with aq. ext. opii and glycerine, will be found serviceable. These applications should be made every day, or every other day, until the passage of such steel sound as the urethra will allow without pain or hemorrhage can be effected. In this way the urethra can be prepared in a week or ten days for the electrolytic treatment. We will take occasion just here to speak especially of one agent, which we have found of inestimable value in all such cases. We refer to the Buffalo Lithia Water, Spring No. 2, from the famous springs in Mecklenburg county, Va., owned by Col. Thomas F. Goode. This is truly a most valuable agent, and we employ it *ad libitum* in all cases of urethral or vesical irritation. It seems to not only act as a neutralizer of the urine, but also as a nervous sedative to the genito-urinary apparatus. We remember to have attended a Captain McG., of this city, some eighteen months ago, for a

most distressing case of urethral and vesical irritation. After the free use of this most valuable water he passed a small calculus, which was partly crumbled, and he has had no further trouble since. Our belief is that the calculus had lodged about the neck of the bladder and was the cause of the continued irritation, and that under the use of the water it was dissolved and finally reduced to a size which admitted of its expulsion *per urethram*. But it is not our intention to laud this water so much as a solvent of stone as for its unquestionable merits as a bland diuretic and sedative.

Hemorrhage may, and does, occur after the use of the electrode bougie, and generally indicates the impropriety of such treatment until the cause is ascertained and removed. When the blood is fresh, bright red, and follows the immediate withdrawal of the instrument, it is generally due to the presence of an ulcerated spot, or to granular inflammation, or to roughness in handling the electrode. The treatment proper in such cases is very similar to that laid down for inflamed stricture, and embraces the general rules for allaying local and general irritation. The best local applications are made by means of the deep urethral syringe and the cupped sound, and by ointment-carriers of various patterns. The agents of most service in this condition are zinc, nit. silver, cupri sulph., tannin, and as adjuvants, glycerine, morphia, and belladonna.

The strength of these agents should be modified to suit circumstances. No exact guide can be given, but we would enjoin caution in the use of all active caustics in the urethra. Our rule is to commence with a five-grain solution of zinc, silver, or sulphate of copper carried down to the part affected by means of a Taylor's syringe, and gradually increase the strength until the patient feels a

decided impression from the injections. If we use the cupped sound we commence with a similar strength in the shape of an ointment, but when it becomes necessary to touch the spot with a very concentrated solution of any of the active agents, we discard the cupped sound and rely upon Taylor's syringe or Dick's caustic catheter syringe, by means of which *a drop* of any solution may be placed at the exact spot which may need medication. We consider Lallemand's porte-caustic a very unsafe instrument, and do not recommend it, or use it ourselves. Another very excellent method of applying strong medicaments to certain diseased portions of the urethral canal is by means of a compound instrument which we have devised, and find can be made available for a number of purposes.

This instrument, known as "Bryce's Urethral Applicator and Syringe," consists of a silver cylindrical tube, *perfectly straight*, ten inches long, with a number of perforations near the vesical end; within this tube slides another tube of equal length, provided with a large fenestrum to correspond with the perforations in the outer tube. An air-tight plunger fits accurately in this inner tube. An ointment may be placed in this tube, and the whole encased in the outer one. This instrument is so arranged that when it is carried down to any desired spot, by turning the inner tube and forcing a little gauge pin into a slot in the outer tube, the fenestrum is brought opposite the perforations in the outer tube. By gently forcing the piston rod down, an ointment may thus be applied in any quantity to any particular spot or spots within the urethral tract. The instrument may be used equally as well for a syringe. It is the best one we have ever used for medicating the urethra. The surgeon can with positive certainty know *exactly where* he is applying

his remedies, and has perfect control of such agents, medicating only such spots as he may choose, applying large or small quantities as the case may demand. Any surgeon who is familiar with the anatomy of the parts knows that a *perfectly straight* instrument can be readily passed into the bladder. Therefore, this instrument can be used for the various purposes of a simple catheter, an ointment-carrier, or a syringe for caustic solutions.

Urethral Hyperæsthesia.—Before closing this chapter we will mention one other complication, which will frequently be found one of the most embarrassing conditions encountered in treating the urethra—existing after the stricture has been cured, and yet giving rise to symptoms which simulate stricture and may cause the patient to doubt his cure. We refer to urethral hyperæsthesia.

Quite full articles on the subjects of electrolytic treatment of stricture (illustrative cases) and urethral hyperæsthesia appeared from the author's pen in the December, 1883, and January, February, and March numbers, 1884, of the *Southern Clinic*, Richmond, Va.

DIRECTIONS FOR MAKING POST-MORTEM EXAMINATIONS.

The instruments *necessary* are a dissecting case, to which are added a bone saw, a hammer and chisel, and some strong surgical needles, with stout linen thread, well waxed, for sewing up the incisions made in the skin. The physician should also provide himself with some strips of parchment paper for labelling specimens for microscopical examination, waxed paper for wrapping them up, and, in cases of suspected poisoning, with *clean* jars for the contents of the stomach and intestines to be **examined chemically**.

In medico-legal cases it is of the utmost importance that a careful record be kept of everything in connection with the post-mortem examination, and this is also very desirable in ordinary cases which are conducted for the purpose of determining the pathology of the disease, and therefore the operator should have paper and pen and ink to make the necessary notes.

The following four cardinal points should be borne in mind, whereby the inquiry is systematized and much time and labor is saved:

In medico-legal cases note--

1. Was the individual viable and did he live?
2. If he has lived, how long has he been dead?
3. The cause of death.
4. The pathology of the disease from which he died.

The latter point enters into the question only in ordinary non-medico legal cases. Nothing should be guessed at, but every fact stated correctly, without inferences of any kind. State the date and the hour of the day when the examination was begun, and in ordinary cases how long after death.

External Appearances.—Note the position of the body, the condition of the clothes, wounds or bruises, or other external signs of violence, giving exact measurement of wounds, and compare the same with any instrument which may have been found near the body. In case the body is not known, examine the hair, the teeth, and other peculiarities, such as moles, scars, and other distinctive features, for identification of the body afterwards. In ordinary cases only the rigor mortis need be noted.

After the hands and arms have been bared and carefully anointed with carbolized oil or cosmoline to prevent poisoning, make an incision into the skin from the upper edge of the sternum to the pubic bone, making a curve

around the umbilicus. Then cut down carefully through the superficial and deep fascia of the abdominal walls an inch or so above the pubis, and lifting the abdominal integument with the left hand, introduce the knife, with its back downwards, into the cut, and slit the abdomen open up to the diaphragm, cutting through the muscles and peritoneum, thus exposing the abdominal viscera. Note the position of the diaphragm, the relative position of the abdominal viscera, the quantity and character of the fluid contained in the cavity, without, however, as yet disturbing anything by manipulation. Next open the thorax by dissecting the skin and pectoral muscles from the sternum and costal cartilages, and then by cutting through the sterno-clavicular articulation on either side, and through the costal cartilages as close to the ribs as possible. Lift the lower end of the sternum and detach the diaphragm and pleura from its under surface, when it can be lifted up and the thoracic viscera are exposed. Note amount and character of fluid in pleural cavities, the color and size of the lungs and heart, and their relative position. Examine and note the condition of the different organs in the following order :

1. The pericardium and pericardial fluid.
2. Ventricles of heart, valves, auricles, large vessels.
3. Lungs, bronchi and trachea, mediastinal, and other glands.
4. Larynx.
5. Œsophagus.
6. Internal surface of ribs and spinal column after the thoracic viscera have been removed.

In the same way examine the abdominal organs and note their condition in the following order.

1. Stomach.—In suspected poisoning remove the organ with its contents, empty the latter into a clean jar, seal it

and label it, adding date and hour ; then open the stomach along its convexity and examine its mucous membrane, removing for microscopical examination small pieces (say one inch square) from different portions of the organ.

2. Intestines, with omentum, mesentery, and glands.

3. Liver and gall bladder, with duct.

4. Pancreas.

5. Spleen.

6. Kidneys, with suprarenal capsules and ureters

7. Abdominal vessels and ganglia.

8. Bladder.

9. Uterus and its appendages.

In cases of sudden death in the female in which large effusion of blood is found in the abdominal cavity, search for rupture of sack of extra uterine pregnancy and carefully search the blood clots for product of conception. In cases where it is deemed necessary to examine the nerve centres, the brain and spinal cord, the operator should place the cadaver upon the chest and abdomen, with the head projecting beyond the edge of the table ; then part the hair across the vertex from ear to ear and make the incision on this line down to the bone. The scalp can then easily be drawn forward and reflected over the forehead and backwards over the occiput, thus baring the whole calvarium. An incision is then made around the skull through the occipito-frontalis and the temporal muscles, the line running from about an inch above the eyebrows to the level of the upper edge of the external ear, and from there to a point about one inch above the occipital protuberance, thus forming a sharp angle just behind the ear. This form of cut, when executed with the saw, will remove a sufficiently large piece of the skull for the examination of the brain, and which at the same time is held in place by the scalp alone, without wiring

when the examination is completed. In making the saw cut, care should be taken not to wound the dura mater and brain, but to depend upon the leverage of the chisel to completely sever the bone.

The brain being exposed, examine the inner surface of the skull cap for fractures, the surface of the dura mater, longitudinal sinus, pia mater and brain; then open dura mater and note amount of cerebro-spinal fluid. Next make incisions into the brain, after having removed it from the cavity of the cranium, with as much of the medulla oblongata as can be reached, from before backward through the hemispheres, and note the condition of the brain substance and its vessels; also open the ventricles and make incisions into the cerebellum.

The last step in the examination is to open the spinal canal and examine its contents. To do this, make an incision through the skin along the whole length of the spinal column, retract the skin, and then divide the muscles on either side of the spinous processes of the vertebrae and dissect them back laterally, thus exposing the lamina of the vertebrae. A saw cut is then carried throughout the whole length of the spinal column on either side of the spinous processes and by the aid of the mallet and chisel the bony vault is removed and spinal cord exposed. Examine the cord *in situ* and note the condition of the membranes, the amount and character of the cerebro-spinal fluid, and the superficial vessels. Then remove the cord from its bed, after having cut the nerve trunks on either side, and make transverse incisions at intervals of one or one and a half inches, so as to examine the substance of the cord. If it is to be preserved for microscopic examination, the cord and portions of the brain should be placed in dilute alcohol or in Mueller's fluid. All organs should be weighed and their weights

recorded and compared with the normal weight as given by Quain and Sharpey in Heath's Manual of Surgery.

AVERAGE WEIGHT OF THE VARIOUS ORGANS.

	<i>Male.</i>		<i>Female.</i>	
Brain	49½	oz. avoird.	44	oz. avoird.
Cerebrum	43	" 15 dr.	38	" 12 dr.
Cerebellum	5	" 4 "	4	" 12½ "
Pons and medulla obl'gata,	0	" 15¼ "	1	" ¼ "
Spinal cord	1	" 5 "	1	" 4 "
Heart	11	" 0 "	9	" 0 "
Lungs,) right	24	" 0 "	17	" 0 "
) left	21	" 0 "	15	" 0 "
Thyroid gland	1	" 0 "	2	" 0 "
Liver	53	" 0 "	45	" 0 "
Pancreas	3	" 0 "	3	" 3 "
Spleen	6	" 0 "	5	" 0 "
Kidney	5½	" 0 "	5	" 0 "
Suprarenal capsules	0	" ½ "	0	" ½ "
Prostate	0	" 9 "		
Testis	1	" 0 "		
Uterus (virgin)			7 to 12	"
Ovary			1 to 1½	"

After the examination is completed the body should be sewed up and brought into as near a natural shape as possible. All traces of blood should be washed from the skin and clean clothes should be put on it before the family is admitted into the room.

From Warner's Reference Book.

EXAMINATION OF URINE.

The specific gravity of urine is about 1020, varying somewhat with the season and the consequent amount of perspiration. It is increased in diabetes mellitus, some-

times reaching 1050 in acute fevers, in the first stage of acute Bright's disease, and from excess of urea; it is diminished in all other stages of Bright's disease, in some forms of heart disease and hysteria, and where urea is diminished from any cause. In fact, "lower specific gravity generally means less urea."

The quantity of urine voided in twenty-four hours averages about fifty ounces. This is greatly increased in both forms of diabetes, hysteria, etc., and decreased in cirrhosis of the liver, Bright's disease, etc. Increase in quantity and specific gravity is strong indication of diabetes mellitus, and calls for tests for sugar; decrease in both quantity and specific gravity is presumptive of Bright's disease, and calls attention to test for albumen.

Earthy phosphates in excess may render the urine partially opaque when passed. In the course of an hour they settle toward the bottom of the vessel, and leave a clear supernatant fluid. The addition of a few drops of acid will quickly dissipate a deposit of the phosphates, while the application of heat will increase it and render the urine turbid.

For Albumen.

Heat Test.—Fill a test-tube one-fourth to one-third its depth with clear urine. If not distinctly acid add a drop or two of acetic acid. Boil over a spirit lamp. Any opacity so produced is due to albumen or earthy phosphates. If due to the latter, a few drops of nitric acid will dissipate it; if to albumen, it is permanent. Further, if to the boiling urine we add half as much of a strong solution (1 part to 2 of distilled water) of caustic potash, the albumen will dissolve and the earthy phosphates will again be separated in flocculi.

Nitric Acid Test.—Upon a convenient quantity of pure, colorless nitric acid, in a small test-tube, allow an equal amount of clear urine to trickle from a pipette down the side of the inclined glass. It will thus form a layer over the acid, and if albumen be present there will be a sharp white band or zone, of varying thickness according to the quantity of albumen present. A somewhat similar appearance may arise from action of the acid upon the mixed urates when present in excess; but the zone does not remain so sharply defined on its upper surface in this case, but is diffused into the urine above. Furthermore, the ring caused by urates is easily dissipated on the application of heat, while the albumen ring is made more distinct.

For Sugar.

Trommer's Test.—Add to a small quantity of the suspected urine enough of a solution of cupric sulphate to give it a faint bluish tinge, and then an equal bulk of liquor potassæ or liquor sodæ. In addition to the earthy phosphates, there is immediately liberated a blue precipitate of hydrated cupric protoxide, which, if sugar is present, redissolves on agitating the mixture, producing a beautiful blue transparent liquid. If no sugar is present, the liquid is of a turbid greenish hue. If the liquid is boiled for a few seconds, a copious yellow precipitate of hydrated cupric suboxide takes place, which by losing its water becomes red suboxide of copper and falls to the bottom of the tube. The color, to be characteristic, must be a decided yellow or red.

Moore's Test.—Add to the urine an equal bulk of solution of caustic potash, and boil. If sugar be present, a dark cherry color will be obtained; if in large quantity, a dark purple, sometimes almost black.

For Bile.

Noel's Test.—Immerse a strip of blotting paper for a few minutes in the fluid; dry, and add a drop of nitric acid containing a little nitrous acid. If bile be present, a violet color results, changing to red or yellow.

Nitric Acid Test.—Place a drop of the fluid on a white porcelain plate, add carefully a drop or two of nitric acid, and at the point of contact of the fluids there will be seen a play of colors passing from red to green, pink, blue, violet, and yellow.

For Chlorides, Phosphates, Etc.

If albumen be present in considerable quantity it must be removed.

Nitrate of Silver Test.—If a few drops of nitrate of silver solution be added to the urine, a cloudy precipitate will be formed if chlorides or phosphates be present. Nitric acid will dissolve the latter, but leave the former as chloride of silver.

The chlorides are greatly diminished in fevers and pneumonia; in the latter sometimes absent. Their reappearance in the urine is a favorable indication.

Earthy phosphates are thrown down by heating urine rendered alkaline by the addition of ammonia or solution of potash. They are diminished in renal disease; increased in diseases of nervous centres, rickets, dyspepsia, etc.

Solution of nitrate of silver throws down alkaline phosphates and chloride of silver. Ammonia will dissolve both precipitates, nitric acid only the phosphatic. By again neutralizing the acid with ammonia, the phosphatic deposit will reappear, and again dissolve by excess of acids.

ARTIFICIAL RESPIRATION.

In case of asphyxia, no time is to be lost in removing a patient to more comfortable quarters. Rubbing the limbs upward towards the trunk may be kept up and artificial warmth be applied by assistants, while artificial respiration is kept up by either of the following methods. The effort to resuscitate one apparently drowned, or otherwise asphyxiated, should be maintained for an hour at the very least, if success is not attained earlier :

Sylvester's Method.—See that all tight bands and clothing are unloosed, the mouth and nostrils clean, the tongue drawn forward and held out of the mouth (best by an elastic band around it and under the chin). Place the subject on his back, on a flat surface, inclined from the feet upwards ; raise and support the head and shoulders on a small, firm cushion, or folded article of dress placed under the shoulder-blades ; grasp the patient's arms just above the elbows, and draw the arms gently and steadily outwards and upwards until they meet above the head, so as to draw air into the lungs, and keep the arms in that position for two seconds ; then turn down the patient's arms, and press them gently and firmly for two seconds against the sides of the chest, pressing at same time on the breast-bone so as to empty the lungs. Repeat these measures regularly fifteen times a minute.

As soon as attempts at natural respiration occur, cease effort, and favor them by ammonia to nostrils.

Marshall Hall's Method.—Clean out the mouth, loosen clothing, and lay the patient upon a hard surface on his face, in such a way that the forehead shall rest upon the arm laid transversely under it. Slowly and regularly turn the patient over upon the side and a little beyond it, then back again upon the face, momentary pressure being ap-

plied to the spine as the patient reaches a prone position, so as to completely empty the lungs. Repeat regularly fifteen times a minute.

POISONS AND ANTIDOTES.

Acids, Mineral.—Chalk, magnesia (plaster off wall in emergency), solution carbonate of soda, emollient drinks, fixed oils.

Aconite.—Emetics, stimulants external and internal.

Antim. Tart.—Vegetable acids, such as tannic acid, catechu.

Arsenic.—Moist peroxide of iron (obtained from perchloride of iron and calcined magnesia), charcoal, ammonia, artificial respiration, cold affusion.

Atropine—Same as belladonna.

Argenti Nit.—Solution of common salt in demulcent drinks.

Belladonna.—Emetics (chiefly sulphate of copper—gr. x), cold to head, active cathartics, ammonia externally and internally, stimulants, opium.

Cannabis Indica.—Hot brandy and water, vegetable acids (lemon juice, vinegar, etc.); allow patient to sleep; blister to nape of neck.

Cantharides.—Emetics, emollient drinks, opiates by mouth and rectum.

Carbolic Acid.—Castor oil, olive oil.

Chlorine Water.—Albumen, white of egg, milk, flour.

Chloroform.—Fresh air, artificial respiration (inclining head down, pull tongue forward), galvanism to pneumogastric and through diaphragm, brandy and ammonia enemata.

Colchicum.—Emetics, followed by demulcent drinks. If *coma* be present, brandy, ammonia, coffee.

Conium.—Emetics, followed by stimulants, external and internal.

Corrosive Sublimate.—Albumen, white of egg (4 grs. sublimate require white of one egg), flour, milk, protochloride of tin.

Croton Oil.—Emetic of sulphate of copper (10 grs.) followed by mucilaginous fluids, containing opium.

Cupri Sulph.—Albumen or white of egg.

Digitalis.—Recumbent posture after emetics, stimulants internally and externally.

Elaterium.—Demulcent drinks and enemata, small doses opium, and the warm bath.

Hydrocyanic Acid.—Fresh air and artificial respiration, with cold affusion; freshly precipitated oxide of iron, with an alkaline carbonate.

Hyoscyamus.—Stomach pump, emetics, stimulants external and internal, lemon juice.

Iodine.—Emetics and demulcent drinks, starch or flour diffused in water.

Lead Salts.—Sulphate or phosphate of soda, epsom salts, succeeded by emetics, and afterwards opium and milk.

Opium and Morphine.—Emetics, stomach pump, stimulants internal and external, brandy and coffee, cold affusion, ammonia to nostrils, galvanic shocks, compelling to move about, artificial respiration, and belladonna.

Phosphorus.—Magnesia, turpentine, emetics and purgatives.

Potash and Soda Salts.—Dilute acetic acid, citric acid, lemon juice, fixed oils, demulcents.

Stramonium.—Same as belladonna.

Strychnine and Nux Vomica.—Chloroform, belladonna, tincture of aconite, morphine, tobacco, chloral in drachm doses; 8 grs. morphine, antidote to 1 gr. strychnine.

Tobacco.—Emetic, stimulants external and internal, strychnine.

Zinc Salts.—Carbonate of soda, emetics, warm demulcent drinks.

General Antidote for Unknown Poisons.

Where a patient has taken arsenic, zinc, digitaline, or other mineral poison, or where we are in doubt as to what the poison may be, the following will render the poison completely insoluble, and may be administered at once:

Solution of sulphate of iron (sp. grav. 1.45)	2½ oz.
Calcined magnesia	2 "
Water	20 "
Washed animal charcoal	1 "

Keep the solution of the sulphate of iron in one vessel and the magnesia and charcoal in another with some water. When needed for use pour the solution of iron into the other vessel and violently shake up. Give 1½ to 3 ounces at a dose.

DISINFECTANTS.

There are three classes of disinfectants, as follows:

1. Those agents which are capable of entirely destroying and restraining every contagious or infectious virus. Under this head we find the caustic acids, acid salts of metals, carbolic acid, corrosive sublimate, &c.

2. Those agents which arrest or prevent fermentation and putrefaction: Carbolic acid, salicylic acid, chloral hydrate, and a host of drugs.

3. Deodorants, absorbents, &c., comprising all chemicals which deodorize or absorb gases, putrid exhalations, &c. The most valuable of these agents are charcoal, *Chlorine*, quicklime, and the like.

For general use, copperas, tar, lime, charcoal, permanganate of potash, carbolic acid, and a few other agents are the most useful to recommend to the people. The following from Chambers' Physician's Reference Book will be found convenient:

Privies.—Eight to ten pounds of *sulphate of iron* (*copperas*) and a pint of *crude carbolic acid* (if it can be had) dissolved in five or six gallons of water. *Chloride of lime*, *chloride of zinc*, six ounces to a gallon of water; *chloride of iron*, one pound to a gallon of water.

Sewers, Ditches, Surfaces of Drying Ponds, etc.—*Heavy oil or coal tar*, or a quantity of the strongest solution of *sulphate or sesquichloride of iron* mixed with a twentieth part as much of *crude carbolic acid*; or mix one part of "*heavy oil*" with five parts of *quicklime* and ten parts of sawdust.

Water-Closets, Bed-Pans, etc.—*Labarraque's solution of chlorinated soda*, a fluid ounce to a quart of water; carbolic acid solution, or, as recommended by Koch as a disinfectant germicide, *corrosive chloride of mercury*, two drachms to a gallon of water. In cases of typhoid fever, the last is recommended as the most efficacious disinfectant that we have. When cholera is in the country, the water-closets and necessities should be regularly disinfected every evening, allowing a pint of the copperas and carbolic acid, or half as much of the corrosive sublimate solution, to every four persons on the premises.

Clothing.—If much contaminated, *burn* them up. If otherwise, *boil* thoroughly for an hour or more. Woolen goods should be *fumigated* with *sulphur fumes*. Towels and other articles of clothing should be thrown at once into a solution of *permanganate of potassium*, one ounce to three gallons of water, or a strong solution of *carbolic acid*, or the *corrosive sublimate* solution referred to above. Clothing that cannot be boiled should be exposed to a dry heat of 200° to 250° F.

Occupied Rooms.—Free ventilation, sunlight, *chloride of lime*, *carbolic acid solutions*, spray of solution of *nitrate of lead*, *chloralum*, *bromo-chloralum*, *Listerine*, etc.

Hospital Wards.—Carbolic acid, chloride of lime, *bromine*, iodine, etc.

TABLE OF ERUPTIVE FEVERS.

NAMES.	INCUBATION.	DAY OF RASH.	CHARACTER OF RASH.	RASH FADES.	DURATION.
Measles. <i>Rubeola.</i>	10 to 14 days.	4th day of fever after 72 hours' illness.	Small red dots, resembling flea bites, first appearing on temples and forehead, forming blotches with semilunar borders.	On the 7th day of fever.	6 to 10 days
Scarlet Fever. <i>Scarlatina.</i>	1 to 6 days. Occasionally 21 days. 1 to 12 days.	2d day of fever after 24 hours' illness.	Bright scarlet, rapidly diffused, first on chest and upper extremities,	On the 5th day of fever.	8 to 9 days
Typhus Fever. <i>Ship Fever.</i>	10 to 14 days, or suddenly.	7th to 14th day.	Mulberry-colored maculæ general and abundant over abdomen, extending to extremities.		14 to 21 days
Typhoid Fever. <i>Enteric Fever.</i>	10 to 14 days.	3d day of fever after 48 hours' illness.	Rose-colored papules, elevated, few in number, limited to trunk; fresh spots persisting to occur during career.		22 to 30 days
Small-Pox. <i>Variola.</i>	4 days.	2d day of fever after 24 hours' illness.	Small round red hard pimples, forming vesicles (<i>umbilicated</i>); then pustules, first appearing on face and wrists.	9th day scabs form and about 14th day fall off	14 to 21 days
Chicken-Pox. <i>Varicella.</i>	3 to 7 days.	After 12 or 36 hours' illness.	Small rose-colored vesicles, which do not become pustular.	Slight scabs of short duration.	6 to 7 days
Erysipelas.	6 to 10 days.		Diffused redness, either of a dusky or yellowish hue, with swelling.	From 24 to 48 hours.	
Roseola.			Rose-colored spots, not elevated, occurring regularly at different points.		

TABLE OF DIGESTIBILITY OF FOOD.

ARTICLE OF DIET.	HOW PREPARED.	TIME OF CHIMIFICATION.
Pigs' feet, soused,	Boiled	1 hour 0 minutes.
Tripe	"	1 " 0 "
Eggs, whipped . .	Raw	1 " 30 "
Salmon trout, fresh fish	Boiled	1 " 30 "
Venison	Broiled	1 " 30 "
Brains	Boiled	1 " 45 "
Liver	Broiled	2 " 0 "
Codfish, dried . .	Boiled	2 " 6 "
Eggs	Roasted	2 " 15 "
Turkey	Boiled	2 " 25 "
Gelatine	"	2 " 30 "
Goose	Roasted	2 " 30 "
Pig, sucking . . .	"	2 " 30 "
Lamb	Broiled	2 " 30 "
Chicken	Fricasseed	2 " 45 "
Beef	Boiled	2 " 0 "
"	Roasted	3 " 0 "
Mutton	Boiled	3 " 0 "
"	Roasted	3 " 15 "
Oysters	Stewed	3 " 30 "
Cheese	Raw	3 " 30 "
Eggs	Hard boiled . . .	3 " 30 "
"	Fried	3 " 30 "
Beef	"	4 " 0 "
Fowls	Boiled	4 " 0 "
"	Roasted	4 " 0 "
Ducks	"	4 " 0 "
Pork	"	5 " 15 "
Rice	Boiled	1 " 0 "
Apples, sweet and mellow	Raw	1 " 30 "
Sago	Boiled	1 " 45 "
Tapioca	"	2 " 0 "
Barley	"	2 " 0 "

TABLE OF DIGESTIBILITY—CONTINUED.

ARTICLE OF DIET.	HOW PREPARED.	TIME OF CHIMIFICATION.		
Apples, sour and mellow	Raw	2 hours 0 minutes.		
Cabbage, with vinegar	"	2	" 0	"
Beans	Boiled	2	" 30	"
Sponge cake	Baked	2	" 30	"
Parsnips	Boiled	2	" 30	"
Potatoes	Roasted	2	" 30	"
"	Baked	2	" 33	"
Apple dumpling	Boiled	3	" 0	"
Indian corn cake	Baked	3	" 0	"
Indian corn bread,	"	3	" 15	"
Carrot	Boiled	3	" 15	"
Wheaten bread	Baked	3	" 30	"
Potatoes	Boiled	3	" 30	"
Turnips.	"	3	" 30	"
Beets	"	3	" 45	"
Cabbage	"	4	" 0	"

THERMOMETRY IN DISEASE.

The normal temperature of the human body is 98° F. Children have normally a higher temperature than adults (about one or two degrees). A temperature continued above 98.5° indicates prostration and illness; 101 to 105° , severe fever; 105 to 108° , great danger; 108 to 109° , impending death. A temperature of 105 or 106° on first day of illness indicates ephemeral or malarious fever; certainly *not* typhoid. In typhoid fever, an evening temperature of 103.5° indicates a mild course; 105° in the evening or 104° in the morning, in the third week, indicates danger. An uniform temperature from morning until evening is favorable. A high temperature from evening until morning is unfavorable. A falling temperature from evening until morning is favorable. A rising temperature from evening until morning is dangerous.

COMPARATIVELY NEW REMEDIES

Paraldehyd.—Prepared by heating ethylaldehyd with a mineral acid, or with chloride of zinc. Useful as a hypnotic where sleeplessness is not due to *pain*, as in *delirium tremens*, hysteria, &c. Dose, $\mathfrak{zj}$, and freely diluted.

Hydroquinone.—Antiseptic, antifermentative, and antipyretic. Dose, gr. ii to x.

Sparteine.—A *liquid alkaloid* obtained from *sarothamnus scoparius*—a heart tonic acting somewhat as digitalis. Dose: In form of *sulphate*, $\frac{1}{20}$ to $\frac{1}{4}$ gr. hypodermically; internally in pill or capsule, $\frac{1}{4}$ to 1 or 2 gr.

Apiol.—Prepared from parsley. Used for amenorrhœa, etc. Dose, 3 to 5 grains in capsules.

Antipyrine.—Soluble in water and alcohol. Possesses strong antipyretic properties, used in typhoid fever and

rheumatism. Dose, 15 to 30 grains, followed by smaller doses. Best given with syrup. Spirits of nitre and antipyrine should not be combined in prescription.

Antifebrin (Acetanilid).—Formed by action of acetic acid on aniline oil. Claimed to be a powerful antipyretic. Dose, 4 to 15 grains.

Acid Osmic.—Used topically in one per cent. aqueous solution for goitre, parenchymatous swelling, neuralgia. Recommended internally for epilepsy. Dose, 1-65th grain.

Arbutin.—A glucoside contained in *Uva Ursi* leaves. Recommended for catarrh of bladder. Dose 40 to 60 grains.

Chrysarobin (Chrysophanic Acid).—Soluble in fats. Used in form of ointment or chloroform solution for cutaneous diseases, tinea capitis, psoriasis.

Cocaine.—Active alkaloid of coca leaves. Crystalline, forming soluble salts, of which the muriate or hydrochlorate is generally used. Remarkable for producing local anæsthesia; useful, therefore, in various surgical operations, especially ophthalmic surgery. Four per cent. aqueous solution is mostly used, either externally applied or hypodermically injected. Cocaine is also recommended for seasickness in $\frac{1}{4}$ grain doses.

Homatropine Hydrobromide.—It dilates pupils rapidly. Also used for phthisical night-sweats like atropia.

Hyoscin Hydrobromide—Obtained from henbane leaves, isomeric with atropia. Used in asthma, violent coughs, alcoholism, acute delirium, chorea, epilepsy. Dose, 1-200th to 1-100th grain.

Hypnon.—Made by dry distillation of calcium acetate and calcium benzoate. Said to produce hypnotic effects in doses of 3 to 8 grains.

Iodol.—A desirable substitute for iodoform. Used *per se*, or in form of ointment or alcoholic solution.

Lanolin.—Sheeps' wool fat. Remarkable for its miscibility with large proportion of water, and its property of being rapidly absorbed by tissues with which it is brought in contact. It is used as a basis for ointments when rapid absorption is desirable.

Picrotoxin.—Used in doses of 1-200th to 1-40th grain, hypodermically administered, for the night-sweats of phthisis.

Resorcin.—Used as an antipyretic and antiseptic in typhoid fever, diphtheria, phthisical fevers, eczema, etc. Dose, 5 to 30 grains.

Salol.—Used in place of salicylic acid in treatment of rheumatism, diabetes, etc. Dose, 5 grains. Externally applied as an antiseptic.

Strophanthus.—A new cardiac remedy to take place of digitalis. A tincture is on the market, of which the dose is 2 to 6 drops.

Terebene.—A hydrocarbon oil produced by action of sulphuric acid on turpentine. Aromatic odor *not* like oil of turpentine. Used in dose of 5 to 6 drops on sugar for bronchial coughs and flatulent stomach.

Urethan.—Hypnotic, but devoid of anodyne properties. Recommended especially for treatment of children, as the sleep produced much resembles natural sleep. Adult dose, 30 to 60 grains in solution.

MEDICAL ODDS AND ENDS.

Battery Fluid for All Acid Batteries.

Water	16 oz.
Commercial sulphuric acid . . .	1 "
Bichromate of potash	1 "
Bisulphate of mercury	2 drachms.

Use hot water and thoroughly dissolve the bichromate and the bisulphate ; then slowly add the sulphuric acid. Let it cool before putting into the cell of battery.

To Bleed a Patient.

Do not worry with trying to stick a thumb-lancet into a rolling vein surrounded with fat and deeply seated. Just place a piece of tape moderately tight around the limb above the point at which you wish to bleed, then make an incision through skin and cellular tissue down to the vein. Now, with the parts held asunder and the vein before you, cut it partially in two in a slanting direction with your scissors, or cut it longitudinally with your scalpel.

Pleasant Antiseptic Wash for Hands or Instruments.

R. Acid boric	3 ss.
Acid carbolic	3 j.
Alcohol	3 j.
Aq. destil	3 xv.
Mix.	

To Prepare Catgut Ligatures and Sutures.

Dr. R. W. Fry, of Roanoke, Va., clips the following and hands it to us with his endorsement: "They are placed in a large open-mouthed bottle filled with sulphuric ether, and allowed to remain for forty-eight hours. When removed they are very nearly perfectly white, as the ether removes from the catgut all the animal oil.

They are then placed in a mixture of three parts alcohol and one part juniper oil, with the addition of three drachms of hydronaphthol to each quart of the fluid. The strings are allowed to remain in this mixture for ten days, when they are ready for use. They are semi-transparent in appearance, are perfectly flexible, and exceedingly strong."

To Relieve a Distended Bladder.

When it is impossible to introduce a catheter to relieve a case of retention, a very simple and effective method is to take a whalebone filiform guide and carry it into the bladder, which can always be done if you are patient and gentle. In ninety-nine cases out of a hundred, when you very slowly withdraw the guide the urine will follow in a small but gradually increasing stream. Instead of buying a variety of catheters, send on for three or four of these useful little guides.

To Tap the Bladder.

If the bladder is dangerously distended, and no entrance can be had *per urethram*, in the absence of an aspirator, a common trocar will answer every purpose. Enter the trocar *just above* symphysis pubis and with a quick rotary motion direct it downwards and backwards into the bladder. Let the patient rest upon the side with the hips slighted raised. When the bladder is empty simply withdraw the cannula and put a little iodoform over the point of puncture.

Abbreviations in Prescription Writing.

R—*recipe*—take; Aa—*ana*—of each; Ad—to; Ad lib.—*ad libitum*—at will; Aq.—*aqua*—water; Bis ind.—*bis indies*—twice a day; C. or cong.—*congius*—a gallon; Cht. or chart.—*chartula*—a little paper or powder; Cochl.

—*cochleare*—a spoonful (hence *cochl. parv.*—teaspoonful ; *c. med.*—dessertspoonful ; *c. mag.*—tablespoonful) ; *Cort.*—*cortex*—bark ; *Dil.*—*dilutus*—diluted ; *Dim.*—*dimidius*—one-half ; *F. or ft.*—*fiat*—let it be made ; *Gr.*—*granum*—a grain ; *Gt. or gtt.*—*gutta* or *guttæ*—a drop or drops ; *Ind.*—*indies*—daily ; *Liq.*—*liquor*—a solution ; *M.*—*misce*—mix ; *Mic. pan.*—*mica panis*—bread crumb ; *O.*—*octarius*—a pint ; *Ol.*—*oleum*—oil ; *Ov.*—*ovum*—an egg ; *P. r. n.*—*pro re nata*—as occasion demands ; *Rad.*—*radix*—root ; *Sem.*—*semen*—seed ; *S.*—*signa*—write ; *Tinct., tr., or tra.*—*tinctura*—tincture ; *Usq. ad diliq.*—*usque ad diliquium*—to fainting.

Iodoformized Gauze or Cotton.

To iodoformize your own gauzes, cotton, or other dressings, dissolve the iodoform in ether or alcohol, which is a perfect solvent for iodoform ; saturate the material thoroughly, and when the alcohol or ether evaporates your dressings are evenly and uniformly iodoformized.

How to Prepare Sponges for Surgical Use.

1. Beat well in muslin bag to remove sand.
2. Immerse in solution of muriatic acid, one ounce to water one pint, for three hours, to dissolve remainder of sand.
3. Keep for eight hours in hot running water.
4. Immerse in bichloride of mercury, 1 to 1,000, for ten hours.
5. Preserve in four per. cent. carbolic solution.

A Non-Bitter Solution of Quinine (M. Lutz).

R. Sulphate of quinine	gr. viij.
Dilute sulphuric acid	"
Essence of mint	gtts. v.
Saturated solution of saccharine . . .	3 iiss.
Distilled water	3 xxiiss.

—*Journal de Medecine.*

Sir Andrew Clark's Pill for Chronic Constipation.

An anti-constipation pill, a little different from some others offered for the same purposes, bears the name of the eminent president of the Royal College. It contains one-half a grain each of aloin, extract of nux vomica, sulphate of iron, powdered ipecac, and myrrh. This pill should be taken half an hour before the last meal of the day.

To Acidify the Urine.

It is said that saccharin, in five-grain doses thrice daily, will promptly acidify alkaline urine, to the great relief of cases of cystitis.

Uterine Pencils.

R. Iodoform 5 v.
 Acaciæ pulv.,
 Starch pulv., aa. gr. xxx.
 Glycerini gtt. xxx.

Make pencils No. iii. Sig. Insert one in uterus for abrasions in genital tract after delivery, or after operations in or around vagina. It disinfects for a day or two.

Lotion for Bed-Sores.

Professor Forbes gives the class the following as a preventive against bed-sores and to harden the skin in case of fracture :

R. Salt 3 iv.
 Alum 3 iv.
 Water f 3 viij.
 Alcohol f 3 ij.

M. Sig. Apply over the surface affected.

For Flatus in Children.

Many young children are irritable and cry because they have intestinal flatus. Instead of using opiates, which

are the basis of most of the soothing syrups, Professor Bartholow gives the following as a valuable remedy :

R. Misturæ asafœtidæ f ʒ j.
Sodii bromid. gr. iij -v.—M.

This is a dose for a child from one to four months old.

To Soften Wax in the Ear.

R. Acid boric gr. xx.
Glycerini,
Aqua distillat. aa ʒ ss.

M. Sig. Warm it and drop 5 to 10 drops in the ear twice a day.

Injection for Infantile Convulsions.

R. Musk gr. iij.
Hydrate of chloral gr. x.
Camphor gr. xv.
Water ʒ v.

Sulphur Externally for Sciatica.

Enveloping the limb for one night in flowers of sulphur is claimed to be a cure for sciatica. The urine the next morning smells strongly of sulphuretted hydrogen.

For Erysipelas.

A mixture of one drachm of ichthyol to the ounce of vaseline, applied thickly over the affected parts and covered with lint or cotton batting, is recommended to ease the disease and prevent its spreading.

Collodion for Corns.

A saturated solution of salicylic acid in flexible collodion applied twice each day for ten or twelve days will secure their complete removal.

Cocaine and Lanolin for Burns.

Dr. Wende recommends a preparation made of these substances. It excludes the air and quiets the pain. The cocaine should be pure and the mixture freshly prepared.

Bismuth Test for Sugar in Urine.

Professor DaCosta prefers the use of the bismuth test for sugar in the urine. Take equal parts of urine and liquor potassæ, add a pinch of bismuth subnitrate; boil thoroughly. If sugar is present, the powder turns brown or black.

Injection for Angina Pectoris.

Professor Dujardin-Beaumetz presents :

℞. Hydrobromate of cocaine gr. x.
 Alcohol gtt. xxv.
 Distilled water of cherry-laurel . . . f 5 vi.—M.

Dissolve and inject beneath the skin a quarter or half of a Pravaz syringeful during the attack.

Resorcin in Asthma.

Adeer (*Alleg. Med. Central Zeitung*) recommends that 15 grains of resorcin be given in a half-glass of water during an attack of asthma. It is said that the attack rapidly subsides under this treatment.

Cough Mixture.

Dr. Beck gives for troublesome cough of a violent paroxysmal nature the following mixture :

℞. Cocaine hydrochlorate gr. ij
 Morphine sulphate gr. iss.
 Fluid extract glycyrrh.,
 Glycerini aa m xx.
 Aquæ q. s. ad. f 3 iv.

M. Sig. One dessertspoonful every two hours till the cough is relieved; then less frequently. To be swallowed slowly.

Tests for Purity of Cocaine.

Hartge (*Der Pharmaceut*, January 15, 1887) gives the following as practical tests of the purity of cocaine :

1. When heated upon platinum it must disappear without residue.

2. Solutions of cocaine must be of neutral reaction.

3. Sulphuric acid, when added, should not discolor its solution.

4. When to a solution of cocaine, 1 to 200 or 1 to 500, one drop of a two per cent. solution of potass. permanganate is added, the liquid should become red, but remain clear. If the permanganate is added in drops beyond this point a red precipitate of cocaine will fall, which will become brown on heating, but will give no odor of bitter almonds.

The writer tested six samples of cocaine, finding only one pure.

Hydrotherapy in Typhoid Fever.

Dr. C. S. Bradfute, of Philadelphia, adopts the following :

In a simple case of uncomplicated typhoid fever the patient is sponged with tepid water, containing a little alcohol, twice daily, morning and evening, irrespective of the temperature. If the temperature should reach 104° simple cold water is substituted, and the patient sponged every half-hour or hour until the temperature falls. It is not necessary to employ antipyretic measures unless the temperature rises to 104° ; below that point Nature is fully able to combat it herself. This simple method of reducing the fever has been uniformly successful in the hands of the writer, and he believes, when properly applied, it never fails. Cases with ugly complications are, of course, to be excepted. It may be added that the

pleasant sensations and feeling of well-being which occur in a fever patient after a cold sponge bath introduce a physical element which is not without a favorable influence in the course of the malady.

Diagnosis of Lead-Poisoning.

Moulin (*Gaz. Med. Turin*) states that the skin of a person poisoned with lead becomes intensely black when bathed with an aqueous solution of sodium sulphide, lead sulphide being formed. The reaction is not noticed on parts which have been recently washed. This reaction is said to precede the appearance of the blue lines on the gums, and is therefore especially important in diagnosis.

Treatment of Hip-Disease.

The following conclusions are reached by Dr. B. E. McKenzie in a recent article on the above subject :

1. Constitutional treatment, such as is employed in other wasting diseases, is of prime importance in all cases.
2. In early stages of the disease, treatment by rest for the joint is indicated.
3. Rest can be better obtained by employing a portable fixation apparatus than by any means requiring confinement in bed.
4. Deformity, if not fixed by adhesions or contracted muscles, may be corrected by the use of portable splints.
5. Deformity, maintained by contracted muscles and adhesions about the joint, may frequently be corrected by myotomy or tenotomy, and the adhesions broken up by using a moderate degree of force.
6. When deformity cannot be so corrected, osteotomy should be performed.
7. If faithful trial of these means fail to give satisfactory results, excision or amputation should be performed.

8. Pus, or sequestra, when known to be present, should be removed by operation.

To Clear and Purify Muddy Water.

To each gallon of water add four drops of perchloride of iron, stirring it well. This will cause all mud to be precipitated, leaving the water clear and free from the iron at the same time. This is far superior to alum or any other clearing agent commonly used.

Dewees' Emmenagogue Mixture.

R. Tr. Ferri. Chlorid.	℥ iij.
Tr. Cantharid.	i.
Tr. Aloes	ss.
Tr. Guaiaci	iss.
Syr. q. s. ad	℥ vi.

M. S. Tablespoonful.

Donovan's Solution.

The officinal liquor of the iodide of arsenic and mercury.

Godfrey's Cordial.

An opiate preparation made of carbonate of potash, water, molasses, tincture of opium, alcohol, and sassafras oil. Each ounce contains about $1\frac{1}{4}$ gr. opium. This was a very popular remedy years ago.

Substitute for the Stomach Pump.

The stomach pump, when it is wanted, like the pistol, is wanted very badly, and generally is out of place or out of order. Take a medium sized piece of rubber tubing about six or seven feet long, oil it well at one end; shove the tongue far back, and pass the tube over tongue and gently into the stomach. Carry the other end up upon a level with the face, and, with the aid of a small funnel, pour down one to three pints of warm water. Pinch the upper end of this tube between the thumb and finger and

bring it down *below the level* of the stomach, when the contents of the stomach will flow out on the principle of the syphon. The stomach can be easily and safely washed out in this manner.

Note.

The majority of the following prescriptions we have taken from the *Medical Calendar*, published quarterly by Messrs. Reed & Carnrick, of New York, and which we presume would be mailed free of charge to physicians sending their address to the above-named gentlemen.

Resorcin in Whooping Cough.

A two per cent. solution of resorcin in water is a good spray for cases of whooping cough. Andeer, of Munich, also uses this solution internally in doses of one ounce four times daily in a child seven years of age. The fits of coughing became less frequent, and the patients were quite free from coughing in eight or ten days. In one case, the patient was only six months old, and the solution had to be sweetened and given by means of a nursing bottle.

Carbolic Acid and Iodine in Whooping Cough.

Dr. Roth has realized very happy results from a combination of iodine and carbolic acid, as follows :

R.	Ac. carbolici	grs. xv.
	Spts. vini	f 3 ss.
	Tr. iodi.	gtt. x.
	Tr. belladonnæ	3 ss.
	Aq. menthæ pip.	f 3 ij.
	Syr. papaveri	f 3 iiss.

M. Sig. A teaspoonful of this is given to children over two years of age every two hours. When this treatment was carried out from the commencement of the complaint, the severity was never great, and even when it was

only begun in cases that had been going on for six or seven weeks, it soon cut them short. He has treated hundreds of cases, and cannot remember one in which the affection lasted longer than four weeks.

Treatment of Eczema.

Dr. Unna, in a recent article, recommends for pustular eczema :

R. Oxide of zinc	}		aa 15 parts.
Gelatin			
Glycerin		25	"
Water		45	"

M.

Heat slightly and apply with a camel's hair brush.

New Remedy for Pediculi Pubis.

The treatment of pediculi pubis by the usual blue ointment has so many inconveniences, with its disagreeable application and its toxic after-effects, that the use of the well-known anti-parasitic action of salicylic acid has of late been much extolled. The formula is :

R. Salicylic acid		2 to 3 parts.
Aromatic vinegar		25 "
Alcohol (eighty per cent.)		72 "

The parts are to be rubbed with a piece of flannel wet with the mixture. One application is usually sufficient.

Sulpho-calcine is also excellent in this trouble, as well as innocent of any irritation in its application.

Injection for Gonorrhœa.

A new specific for gonorrhœa is a one per cent. solution of creosote in decoction of hamamelis combined with boric acid. It is claimed that this will destroy gonococci in two hours.

Mixed Anæsthesia.

Obalinski combines chloroform and cocaine and gives the following method: After giving chloroform for a few minutes until general anæsthesia is noticed, a quantity of cocaine, varying from three-fourths to one grain, is injected into the tissues to be operated upon. No further chloroform is administered.

Gargle for Sub-acute Pharyngitis.

Dr. W. F. Mittendorf has satisfactory results from

R. Ferri et ammonii sulphatis,

Potassii chloratis aa $\frac{3}{4}$ j.

Aquæ f $\frac{3}{4}$ xvi.—M.

Dissolve. Use as a gargle morning and evening.

How to Make Antiseptic Gauze.

Dr. R. F. Weir advises the use of the following formula for making antiseptic gauze. One part of sublimate and two parts of common salt are dissolved in five hundred parts of water; the gauze is soaked in this for an hour, wrung out, and partially dried in a clean room. That is to say, it should not be made or handled in a hospital ward or sick room, and it should be kept in a moist condition in glass jars. The chloride of sodium is intended to prevent the conversion of the sublimate into calomel. Chloride of ammonium will also accomplish this. A small quantity of glycerine is of service in like manner, especially when the gauze is likely to be kept some little time.

Tinea Circinata.

A lotion of hyposulphite of sodium, of one drachm to the ounce of water, applied frequently, is a cleanly, effective, and safe remedy, according to Duhring. Ointments

of sulphur, naphthol, chrysarobin, corrosive sublimate, or white precipitate also will usually effect a cure.

To Sterilize the Urine.

℞. Sodæ biborat 3 ij.
 Acidi borici 3 j.
 Syr. toluatani f 3 ss.
 Aq. dest. ad f 3 vj.

M. Sig. One tablespoonful, in water, every four hours.
 —*Dr. Palmer, Louisville.*

Treatment of Senile Pruritus with Salicylic Preparations.

Prof. Besnier, of Paris, advises the following treatment for senile pruritus: The entire body should be washed every evening with a quart of warm water, to which about two drachms of the following solution have been added :

℞. Carbolic acid 3 j.
 Aromatic vinegar f 3 vij.—M.

Then either of the powders given below should be dusted over the body.

Salicylate of bismuth 3 v.
 Starch 3 ij.—M.

or

℞. Powdered salicylic acid 3 ij.
 Starch 3 ij.—M.

Creasote in Tuberculosis.

Dr. Bourget, of Geneva, is an ardent disciple of the creasote treatment in consumption. He urges the necessity of saturating the system with creasote. In winter the creasote is given in cod-liver oil. In summer it may be combined as follows:

℞. Creasoti 3 ss.
 Liq. potassii arsenitis gtts. xx.
 Vini malagæ 3 xxiv.

M. Sig. Two wineglassfuls at meal time.

The patient constantly wears a permanent inhalation apparatus, consisting of two small pipes, one for each nostril, through the centres of which runs tissue-paper saturated with creasote.

Preventive Treatment of Megrin.

Dr. Hammerschlag has used the following formula in warding off attacks of megrim with great advantage. So far it has not failed him in a single instance:

R. Citrate of caffeine grs. xv.
 Phenacetin grs. xxxj.
 White sugar grs. xv.—M.

Make into ten powders in capsules. Sig. One capsule to be taken between the attacks for premonitory symptoms.

Phenacetin alone is not so efficacious. The treatment may be continued until the attacks cease, which, however, will not be long.

For Perspiring Feet.

Talc. 10 parts.
 Alum 2 parts.

Largely used in Swiss army; preferred to chromic acid, and applicable even for sore feet.

Specific for Rhus Poisoning.

R. Ol. sassafras f ʒ iss.
 Boro-glyceride ʒ iv.—M.

Sig. Apply to affected parts with fine brush, once in six hours. The above will cure in a few hours.

Prurigo and Dry Eczema.

The following is said to be efficacious:

R. Acid. carbolic f ʒ j-ij.
 Glycerini q. s. to dissolve.
 Syrup. aurantii f ʒ xij.—M.

Sig. Tablespoonful morning and evening.

Gargle for Inflammatory Troubles.—(Abraham Jacobi's "Special"):

℞. Potassii chloratis gr. lxxx.
 Tr. ferri chloridi. m clx.
 Glycerini f ʒ ij.
 Aquæ q. s. ad f ʒ viij.

Dissolve and mix. Used as a gargle and internally in doses of half ounce.

For Alopecia — (By Professor Bartholow, Philadelphia) :

℞. Ext. pilocarpi, fld. f ʒ j.
 Tinct. cantharidis f ʒ ss.
 Linimenti saponis, q. s. f ʒ iv.—M.

Sig. Rub in the scalp daily.

For Cystitis.—(By Professor A. J. C. Skene) :

℞. Acid. benzoici,
 Sodii borat aa ʒ ij.
 Infus diosmæ ʒ xij.—M.

Sig. Wineglassful three or four times a day.

Bismuth Ointment for Freckles.

℞. Subnitrate of bismuth ʒ ij.
 Simple ointment ʒ ij.

Apply to the skin at night and remove in the morning with a little cold cream previous to washing.

For Freckles.

℞. Lemon juice ʒ ij.
 Borax, powdered ʒ j.
 Sugar, powdered gr. xxx.

Mix. Let stand a week and then apply a few drops to the spots.

Lotion for Sun-Burn.

R. Citric acid	3 ij.
Pure sulphate of iron	grs. xvij.
Camphor	grs. ij.
Elder flower water	5 ij.

Apply with soft bit of cloth.

Quinsy.

R. Tannin,	gr. xv.
Tinct. iodi.	gtt. iij.
Acid. carbol.	3 ss.
Glycerini	3 v.
Aquæ	5 iiss.

M. Sig. Apply with a brush.

Pruritus Vulvæ.

For this troublesome and annoying malady, Fox gives :

R. Sodii hyposulphitis	5 ss.
Glycerini,	3 ij.
Aquæ destillat	q. s. ad. 5 vi.

Misce. Sig. As a lotion. Is equally good in tinea versicolor.

Remedy for Warts.

R. Salicylic acid,	
Alcohol	aa 2 parts.
Sulphuric ether	5 "
Collodion	10 "

M. Sig. The warts are to be painted with the solution daily.—*E. Vidal.*

Treatment of Syphilitic Condylomata (which is simply a papular eruption in a moist situation).

Wash well with soap and water, then with bichloride, 1 to 1000; then touch with the following solution :

R. Hydrarg. chlorid. corrosiv ℥ j.
 Aquæ destillat. f ̄ss j.—M.

—*Prof. Gross.*

Sexual Weakness and Spermatorrhœa.

R. Fld. ext. sabal. serrulatæ ̄ss j.
 Tr. nucis vomicæ ̄ss iiij.
 Acidi phosphorici dil. ad ̄ss iv.

Sig. ̄ss j ter in die.—*Wm. R. Lowman, M. D., Orangeburg, S. C.*

Chronic Rheumatism.

Fothergill's favorite remedy for chronic rheumatism is given as:

R. Acidi arseniosi gr. iiij.
 Pulv. guaiaci ̄ss iiij.
 Pulv. capsici ̄ss ss.
 Pil. aloes et myrrhæ ̄ss iiij.

Misce et div. in pil. cxx. Sig. One pill thrice daily. It should be combined with general tonic treatment—especially fatty foods.

Rheumatism.

R. Sodii salicylatis ̄ss iv.
 Glycerini ̄ss iiij.
 Ol. gaultheriæ m xx.
 Tinct. ferri chloridi ̄ss iv.
 Acidi citrici gr. x.
 Liq. ammonii citratis q. s. ad ̄ss iv.

M. Sig. A teaspoonful every three to four hours. For anæmic and poorly nourished patients this is excellent.

Varicose Veins.

The *Journal de Medicine* gives the following:

R. Chloride of barium grs. xv.
 Distilled water q. s.
 Lanoline ℥. xi.
 Oil of sweet almonds ℥ iv.

Dissolve the chloride of barium in the distilled water by shaking, and then add the fatty mixture. Rub the dilated veins with this three times a day.

Treatment of Alopecia.

R. Tincture of jaborandi		 aa ʒ iiss.
Tincture of cantharides		
Soap liniment		
Tincture of pyrethrum		
Spirits of citron	}	 aa ʒ iss.
Tincture of tolu		
Tincture of vanilla		

Apply every morning and evening with friction.

Specific for Dysmenorrhœa (when no narrowing exists).—

By C. H. B. Gile, M. D., Venango, Kansas.

R. Pulv. resinæ guaiaci.	
Terebinthinæ canadensis	aa ʒ j.
Ol. sassafras	ʒ ij.
Alcoholis	ʒ viij.

Macerate for seven days and filter; then add hydrg. chloridi corrosive, ʒ j.

Sig. 15 to 20 drops in wineglass water three times a day between the periods.

Whooping Cough.

R. Powdered belladonna root	gr. 1-5 (ʒ).
Dover's powder	gr. ss.
Sublimed sulphur	gr. iv.
White sugar	gr. x.

M. Sig. Take in one dose from two to ten times a day, according to age of patient and effect produced.—*Germain See, Journal de Medicine.*

Papain in Diphtheria.

Dr. J. B. Richardson, Louisville, Ky., advises the use of the following in diphtheria :

R. Papain $\bar{3}$ ij.
 Hydronaphthol gr. ij.
 Acid. hydrochlor dil. gtt. xv.
 Aq. destil. adde $\bar{3}$ xxxij.

M. ft. sol. Sig. Use carefully and thoroughly, by means of hand atomizer, every half hour on throat, and through nostrils on posterior nares and pharynx, if deposit extends to these localities.

A Cure for Dandruff.

Dr. A. J. Harrison, of Bristol, recommends the following salve for dandruff:

Caustic potash gr. viij.
 Phenic acid gr. xxiv.
 Lanolin, }
 Coconut Oil, } aa $\bar{3}$ iv.

M. This preparation should be rubbed into the scalp morning and evening. Complete cure is usually effected in one to three months.

Dysmenorrhœa, Scant and Irregular Menstruation.

The following is worthy of a place among your favorite prescriptions:

R. Cimicifuga rac.,
 Tr. pulsatilla aa $\bar{5}$ j.
 Tr. gelsem $\bar{5}$ ss.
 Tr. viburnum prun. $\bar{3}$ ij.
 Syr. aurantii cor. $\bar{3}$ iv.

M. Sig. A teaspoonful four times a day, four days prior to and during the menstrual period.—*J. C. Fear, M. D., Waverly, Kan.*

Baldness.

Those who wish to try the virtue of pilocarpine as a preventive of baldness are recommended by M. Vigier

to try a pomade consisting of one part of the alkaloid in 200 parts of petrobaserin, the new colorless, inodorous fluid substitute for vaseline. Use it instead of other dressings for the hair, to which it is said to give a glossiness that is unattainable by any other article of the sort.

Treatment of Anæmia.

Dr. R. B. McCall recommends the following mixture :

R. Hydrarg. chlordi corrosivi	gr. i.
Liq. pot. arsenit.	gtt. xl.
Tr. ferr. chlor.	
Acid. hydrochl.	
Syr. simp.	aa ʒ ss.
Elix. simp.	
Aq. pur.	aa ʒ xvi.

M. S. Teaspoonful three times a day after meals. This dose may be diminished one-half, or doubled, according to age of patient and the peculiar indications of the case.

Prophylactic Hair Wash.

The following hair wash is said to keep the scalp cool and the hair dry and free from oil ; also to prevent dandruff, besides being a most agreeable toilet preparation :

R. Spirit etheris	ʒ iss.
Tinct. benzoin	ʒ iss- ʒ ij.
Vanilin	m j.
Heliotropin	m iij.
Ol. geranium	gtt. j.

M. Sig. For hair wash. Keep well corked, and do not expose to flame, as the mixture is highly inflammable.

Treatment of Tubercular Meningitis.

Dr. E. W. Pyle, of Jersey City, writes that he relies upon the following formula in chronic tubercular meningitis :

R. Potass. iod.	gr. xxxij.
Potass. bromid.	℥ iv.
Fld. ext. gelsem	gtt. xvj.
Syr. acaciæ	℥ ij.—M.

Sig. A teaspoonful every four hours to a child four years old.

After a careful experience of fifteen years, the doctor has learned to depend upon this formula for his good results. The dose to be increased or diminished according to the urgency of the case.

Sore Nipples.

Dr. G. W. Mott, of Springfield, Ia., has good results from a lotion of chloral hydrate and aq. dest. (chloral hydrat, grs. xxx, aque dest. fld. ℥ xxiv.—M. Apply on lint.) as an efficient remedy for sore nipples in the early period of lactation. He has used it in six cases where it afforded complete relief. A solution of sulpho calcine is excellent for this disease, applied on absorbent cotton.

Calcium Sulphide in Croup.

The *Medical Register*, in an editorial, recommends the use of sulphide of calcium for croup in doses of one-tenth of a grain hourly for the worst cases.

The use of sulphide of calcium is not open to the same objections as turpeth mineral, alum, copper, and squill, and has the virtue of being readily administered, a qualification by no means to be despised.

The Topical Use of Acetanilide.

Dr. Mewth has used acetanilide as an external application and reports it a valuable adjunct to other remedies. He has used it in psoriasis, in association with mercurials, with excellent results. He has employed it in chronic

irritable ulcer, erysipelas, urticaria, herpes, and a few other conditions of the skin where there has been considerable irritation. The strength of these applications has been generally twenty grains of the drug to an ounce of lanolin or vaseline.

For Croup.

By J. B. Johnson, M. D., Washington City, D. C.

℞. Aquæ destil. ʒ j.
 Potass. chlorat.
 Potass. iodid. aa ʒ j.
 Emulsio arabica ʒ ij.
 Mucilag. acaciæ ext. ipecac fld.
 Ol. res. copaibæ aa ʒ j.—M.

Sig. Shake well. Dose, a teaspoonful every ten minutes, to an infant of eight months, until free vomiting ensues; and then continue the same dose every half hour or hour until the disease is cured. The dose must be given according to the age of the child.

Treatment of Tapeworm.

Dr. W. A. Rape, of Ballinger, advises the following treatment of tapeworm. Half drachm of chloroform is to be given in a bland, acceptable vehicle, to be followed in half an hour by

℞. Ol. tiglii gtt. iv.
 Ol. ricini ʒ iv.
 Glycerini ʒ iv.
 Aq. destil. ad. f ʒ xvi.

M. Sig. Give two teaspoonfuls three hours apart, regularly, till the worm is expelled.

Give salicylic acid in small doses every three or four hours during the day, being careful to keep the bowels open. The patient should fast for twenty-four hours previous to beginning the treatment.

List of Examining and Licensing Bodies in United States.

1. Medical Examining Board of Alabama.
2. Board of Examiners of the Medical Society of the State of California.
3. Board of Examiners of the California State Homœopathic Medical Society.
4. Board of Examiners of the Eclectic Medical Society of the State of California.
5. State Board of Medical Examiners of Colorado.
6. State Board of Medical Examiners of Florida.
7. State Board of Homœopathic Medical Examiners of Florida.
8. Illinois State Board of Health.
9. State Board of Medical Examiners of Iowa.
10. State Board of Medical Examiners of Minnesota.
11. Mississippi State Medical Association, Board of Censors.
12. State Board of Health of Missouri.
13. State Board of Medical Examiners of Montana.
14. Medical Society of New Jersey.
15. Board of Regents of the University of the State of New York—three Boards.
16. Board of Medical Examiners of North Carolina.
17. State Board of Medical Examiners of Oregon.
18. State Board of Medical Examiners of South Carolina.
19. Board of Medical Examiners, State of Tennessee.
20. Censors of the State Medical Society of Vermont.
21. Medical Examining Board of Virginia.
22. State Board of Health of West Virginia.

MEDICAL EXAMINING BOARD OF VIRGINIA.

Composition of the Board: The Board consists of three physicians from each congressional district in the State, and two from the State at large, making thirty-two members, and, in addition also, five homœopathic physicians.

Persons Required to be Examined: Every applicant for the practice of medicine in Virginia, who has not been assessed with a license-tax as a physician or surgeon in this State at some time prior to January 1, 1885, is required to pass a satisfactory examination before he can commence practice.

Application for Examination: Persons wishing to be examined are required to fill out and file with the Secretary of the Board a form of application, stating : (1) age ; (2) residence ; (3) college where graduated (if a graduate), and date of graduation. The application must be accompanied by recommendations from two citizens of the county in which the applicant resides, and a fee of five dollars.

Mode of Conducting Examination: Examinations are held by the Board in session regularly twice each year.

1. Examination questions and answers are to be in writing or printing.

2. The applicant is required to answer at least three-fourths (75 per cent.) of the questions satisfactorily, and show a fair general knowledge of all the branches upon which he is examined.

The examinations are in : (1) chemistry ; (2) anatomy ; (3) physiology ; (4) hygiene ; (5) medical jurisprudence ; (6) materia medica and therapeutics ; (7) obstetrics ; (8) gynecology ; (9) practice of medicine ; (10) surgery.

The Virginia laws require that no person shall be rejected on account of his adherence to any particular school of medicine or system of practice.

COMPLETE DOSE LIST.

Acid

arseniosum, 1-40 to 1-20 gr.
benzoicum, 10 to 30 grs.
boricum, 20 to 30 grs.
carbolicum, 1 to 3 grs.
gallicum, 5 to 15 grs.
hydrobrom. dil., 1 to 2 fl. drs.
hydrochlor. dil., 15 to 30 mins.
hydrocyanic dil., 2 to 4 gttls.
lacticum, $\frac{1}{2}$ to 1 dr.
nitricum dil., 20 to 40 mins.
nitro-muriat. dil., 10 to 20 mins.
phosphoric dil., 20 to 60 mins.
salicylicum, 10 to 20 grs.
sulphuric dil., 10 to 20 mins.
sulphuric arom., 5 to 30 mins.
tannic, 2 to 15 grs.

Aconitina, 1-400 to 1-200 gr.

Adonidin, $\frac{1}{8}$ to $\frac{1}{4}$ gr.

Aloes, 2 to 5 grs.

Alumum, 1 to 3 grs.

Ammonii benzoas, 10 to 20 grs.
bromid., 5 to 30 grs.
carbonat., 3 to 10 grs.
muriat., 5 to 30 grs.
valerianat., 3 to 15 grs.

Amyl nitris, 2 to 5 mins.

Ant. et. pot. tart. (diaphoretic), 1-16 to 1-6 gr. ; emet., 1 to 2 grs.

Antipyrin, 5 to 30 grs.

Apiol, gttls., 3 to 10.

Apomorph. hydrochl., 1-30 to 1-6 gr.

Aqua ammoniae, 5 to 30 mins.
camphorae, 1 to 4 fl. drs.

Argenti nitras 1-6 to $\frac{1}{4}$ gr.

Arsenii iodidum, 1-64 to 1-10 gr.

Asafoetida, 5 to 20 grs.

Atropinae sulph., 1-128 to 1-50 gr.

Bismuthi subnit., 3 to 15 grs.

Caffeina, 1 to 5 grs.

Calc. ii hypophosphis, 3 to 15 grs.

Calx sulphurata, $\frac{1}{2}$ to 1 gr.

Cambogium, 1 to 4 grs.

Camphora, 3 to 10 grs.
monobrom., 2 to 5 grs.

Cantharis, $\frac{1}{2}$ to 2 grs.

Castoreum, 6 to 15 grs.

Catechu, 15 to 30 grs.

Cerri oxalat., or nitrat., 1 to 3 grs.

Chinoidinum, 3 to 30 grs.

Chinoline, 7 to 15 grs.

Chloral, 10 to 30 grs.

Chloroform, 1 to 5 mins.

Chrysarobinum, 3 to 15 grs.

Cinchonidina, 1 to 30 grs.

Cinchonina, 1 to 30 grs.

Cocaine hydrochl., 1 p. c. solution.

Codeina, $\frac{1}{2}$ to 2 grs.

Coniina and its salts, 1-64 to 1-32 gr.

Copaiba, 15 to 30 mins.

Cotina, $\frac{1}{2}$ to 1 gr.

Creasotum, 1 to 3 mins.

Croton chloral, 1 to 10 grs.

Cubeba, 15 to 60 grs.

Cupri acetat., $\frac{1}{2}$ to 6 grs
sulphas, $\frac{1}{2}$ to 10 grs.

Cuprum ammon., 1-6 to 1 gr.

Curara, 1-64 to 1-32 gr.

Digitalinum, 1-64 to 1-32 gr.

Digitalis $\frac{1}{2}$ to 3 grs.

Duboisina & its salts, 1-128 to 1-60 gr

Elaterium, 1-16 to $\frac{1}{4}$ gr.

Ergota, 15 to 60 grs.

Ergotinum, 2 to 8 grs.

Eserina and its salts, 1-64 to 1-20 gr.

Euonymin, 2 to 4 grs.

Hydro-Quinone, 2 to 10 grs.

Kairine, 7 to 20 grs.

Pulsatilla, 1 to 5 grs.

Resorcin, 5 to 30 grs.

Sparteine, sulphate, $\frac{1}{2}$ to 1 gr.

" (hypodermic'y), 1-20 to $\frac{1}{2}$ gr.

Strophantin (hyp'y), 1-100 to 1-60 gr.

Thalline, 2 to 15 grs.

Fluid Extract

aconiti rad., 1 to 5 mins.

anthemidis, 30 to 60 mins.

apocyni cannab., 8 to 30 mins.

arnicae, rad., 5 to 15 mins.

aspidospermae, 15 to 45 mins.

baptisiae, 7 to 30 mins.

belladon. rad., 1 to 3 mins.

belladon. fol., 3 to 6 mins.

brayerae, 2 to 4 fl. drs.

bryoniae, 15 to 60 mins.

buchu, $\frac{1}{2}$ to 2 $\frac{1}{2}$ fl. drs.

calami, 15 to 60 mins.

calend., 15 to 60 mins.

calumbae, 15 to 60 mins.

cannabis ind., 3 to 6 mins.

cantharidis, 1 to 3 mins.

capsici, 1 to 3 mins.

cardam. comp., 15 to 45 mins.

cascarillae, $\frac{3}{4}$ to 2 $\frac{1}{2}$ fl. drs.

caulophylli, 15 to 30 mins.

COMPLETE DOSE LIST—CONTINUED.

Fluid Extract

chimaph., $\frac{3}{4}$ to 1½ fl. drs.
 cimicifuge, 8 to 30 mins.
 cinchonae, 30 to 60 mins.
 cinchonae comp., $\frac{1}{8}$ to 1½ fl. drs.
 cocculi, 1 to 3 mins.
 colch. rad., 3 to 15 mins.
 colch. sem., 1½ to 10 mins.
 conii fol., 3 to 15 mins.
 convallariae rad., 15 to 30 mins.
 corn. flor., 30 to 60 mins.
 coto, 5 to 15 mins.
 cubebae, 15 to 30 mins.
 cypripedii, 15 to 60 mins.
 damianae, $\frac{1}{8}$ to 2 fl. drs.
 digitalis, 1 to 6 mins.
 droserae, 5 to 10 mins.
 dulcamarae, 1 to 2 fl. drs.
 ergotae, 15 to 60 mins.
 erythroxyli, $\frac{1}{4}$ to 2 fl. drs.
 eucalypti, 15 to 60 mins.
 euonymi, 15 to 60 mins.
 eupatorii, 30 to 60 mins.
 euphorb. ipec., 5 to 30 mins.
 gallae, $\frac{3}{4}$ to 2 fl. drs.
 gelsemii, 1 to 8 mins.
 gent., 30 to 60 mins.
 gent. comp., 30 to 60 mins.
 geranii, 15 to 30 mins.
 gilleniae, 15 to 30 mins.
 gossypii, 15 to 45 mins.
 granati rad. cort., $\frac{3}{4}$ to 2 fl. drs.
 grind. rob., 30 to 60 mins.
 grind. squarr., 30 to 60 mins.
 guaiaci ligni, 30 to 60 mins.
 guaranae, 15 to 30 mins.
 haematoxyli, 30 to 60 mins.
 hamamelidis, 60 to 90 mins.
 helleb. nigris, 5 to 15 mins.
 heloniae, 8 to 30 mins.
 hepaticae, 30 to 60 mins.
 humuli, 30 to 60 mins.
 hydrangae, 30 to 60 mins.
 hydrastis, 8 to 30 mins.
 hyoscyami fol., 3 to 30 mins.
 hyoscyami sem., 2 to 8 mins.
 ignatiae, 1 to 6 mins.
 ipecac., 3 to 60 mins.
 irid. versicol., 15 to 30 mins.
 jalapae, 15 to 60 mins.
 junip., 30 to 60 mins.
 kino, 15 to 30 mins.
 krameriae, 30 to 60 mins.

Fluid Extract

leptandrae, 30 to 60 mins.
 lobeliae, 5 to 30 mins.
 lobeliae sem., 3 to 15 mins.
 lupulini, 10 to 30 mins.
 lycopi, 5 to 30 mins.
 mezerei, 3 to 10 mins.
 nuc. vom., 1 to 5 mins.
 pareirae, 30 to 60 mins.
 petroselini, 1 to 2 fl. drs.
 physostigmae, 1 to 3 mins.
 phytolaccae bacca, 5 to 30 mins.
 phytolaccae rad., 5 to 30 mins.
 pilocarpi, 15 to 60 mins.
 piper. nigr., 15 to 45 mins.
 piscidiae, 15 to 60 mins.
 podophylli, 8 to 30 mins.
 prun. virg., 30 to 60 mins.
 pulsatillae, 2 to 10 mins.
 quassiae, 30 to 60 mins.
 quercus, 30 to 60 mins.
 rhei, 15 to 45 mins.
 ricini fol., $\frac{1}{8}$ to 2 fl. drs.
 rosae, $\frac{1}{8}$ to 2 fl. drs.
 rubi, 15 to 60 mins.
 sabiniae, 5 to 15 mins.
 salicis, $\frac{1}{8}$ to 2 fl. drs.
 salviae, $\frac{1}{8}$ to 2 fl. drs.
 sanguin., 5 to 15 mins.
 santali citr., 1 to 2 fl. drs.
 santonicae, 15 to 60 mins.
 sarsap., $\frac{1}{8}$ to 2 fl. drs.
 sassafrae, $\frac{1}{8}$ to 2 fl. drs.
 scillae, 5 to 30 mins.
 scillae comp., 5 to 30 mins.
 scoparii, $\frac{1}{8}$ to 1 fl. dr.
 senegae, 8 to 15 mins.
 sennae, 1 to 4 fl. drs.
 serpent., 30 to 60 mins.
 simarubae, 15 to 30 mins.
 spigeliae, 15 to 60 mins.
 spigeliae et sennae, $\frac{1}{8}$ to 2 fl. drs.
 stillingiae, $\frac{1}{8}$ to 2 fl. drs.
 stillingiae comp., $\frac{1}{8}$ to 2 fl. drs.
 stramonii, 1 to 6 mins.
 sumbul, 15 to 60 mins.
 taraxaci, $\frac{1}{8}$ to 2 fl. drs.
 trit. rep., 1 to 4 fl. drs.
 urticae rad., 5 to 15 mins.
 ustilag. maid., 15 to 60 mins.
 uvae ursi, 30 to 60 mins.
 valer., 30 to 60 mins.
 veratr. vir., 2 to 10 mins.

COMPLETE DOSE LIST—CONTINUED.

Fluid Extract

viburni prunifol., 1 to 5 drs.
 xanthoxyli fruct., 15 to 30 mins.
 xanthoxyli fruct., 15 to 30 mins.
 zingiberis, 8 to 30 mins.

Solid Extract

aconiti rad., 1-12 to $\frac{1}{4}$ gr.
 aloes aqueos, $\frac{1}{2}$ to 3 grs.
 bellad. rad., $\frac{1}{2}$ to $\frac{1}{4}$ gr.
 cannab. ind., 1-6 to 1 gr.
 colch. rad., $\frac{1}{2}$ to $\frac{1}{4}$ grs.
 colocynth, 1 to 5 grs.
 colocynth comp., 1 to 5 grs.
 digitalis, 1-6 to $\frac{1}{2}$ gr.
 dumcamarae, 5 to 15 grs.
 ergotae, 1 to 8 grs.
 gelsemii, 1 to 2 grs.
 haematoxyli, 8 to 30 grs.
 helleb. nigris, $\frac{1}{2}$ to 3 grs.
 humuli, 3 to 15 grs.
 hydrastis, 3 to 10 grs.
 hyoscyamus, 1 to 2 grs.
 ignatiae, $\frac{1}{2}$ to $\frac{1}{4}$ grs.
 iridis versicol., 3 to 6 grs.
 krameriae, 5 to 15 grs.
 leptandrae, 3 to 10 grs.
 nuc. vom., $\frac{1}{2}$ to 1 gr.
 opii, $\frac{1}{2}$ to $\frac{1}{4}$ gr.
 physostigmae, 1-16 to 1-6 gr.
 phytolaccae rad., 1 to 3 grs.
 podophylli, $\frac{1}{2}$ to $\frac{1}{4}$ grs.
 quassiae, 1 to 5 grs.
 rhei, 5 to 15 grs.
 stramonii fol. alc., $\frac{1}{2}$ to $\frac{3}{4}$ gr.
 stramonii sem., 1-6 to $\frac{1}{2}$ gr.
 taraxaci, 5 to 15 grs.
 valerian, 5 to 15 grs.

Fel bovis purif., 3 to 6 grs.

Ferri arsen., 1-20 to $\frac{1}{2}$ gr.

benzoas, 1 to 5 grs.
 carb. sacch., 4 to 15 grs.
 chlorid., 1 to 3 grs.
 citr., 5 to 10 grs.
 et ammon. citr., 1 to 10 grs.
 et ammon. tartr., 5 to 15 grs.
 et pot. tartr., 5 to 30 grs.
 et quin. citr., 5 to 10 grs.
 et strychn. citr., 1 to 5 grs.
 hypophosphis, 5 to 10 grs.
 iodidum, 1 to 5 grs.
 lactas, 1 to 3 grs.
 oxalas, 1 to 3 grs.

Ferri oxide hydrat., $\frac{1}{2}$ to 2 ozs.

phosphas, 1 to 5 grs.
 pyrophosphas, 1 to 5 grs.
 subcarb., 5 to 30 grs.
 sulphas exsicc., 1 to 3 grs.
 valer., 1 to 3 grs.

Ferrum dialysatum, 5 to 15 mins.
 redactum, 1 to 5 grs.

Guarana, 10 to 30 grs.

Hyd. chlorid. corros. 1-64 to 1-10 gr.

chlorid. mite, 1-30 to 10 grs.
 cyanid., 1-16 to $\frac{1}{2}$ gr.
 iodid., flav., 1-6 to 1 gr.
 iodid. rubr., 1-16 to $\frac{1}{2}$ gr.
 iodid. vir., 1-6 to 1 gr.
 subsulphas flav., $\frac{1}{2}$ to 1 gr.
 c. creta, 1 to 8 grs.

Hyoscyamina and salts, 1-65 gr.

Iodoformum, 1 to 3 grs.

Iodum, 1-6 to $\frac{1}{2}$ gr.

Ipecacuanha (expect., 1-6 to 1 gr.
 (emet., 15 to 30 grs.)

Iridin, 2 to 4 grs.

Jalapa, 15 to 30 grs.

Kamala, 1 to 2 drs.

Kino, 8 to 30 grs.

Lactucarium, 8 to 15 grs.

Liq. ammon. acet., 2 to 4 fl. drs.

acidi arseniosi, 2 to 7 mins.
 arsen. et hydr. iod., 2 to 7 mins.
 ferri chloridi, 2 to 10 mins.
 potassae, 5 to 30 mins.
 potassii arsenit., 3 to 7 mins.
 potassii citrat., 2 to 4 fl. drs.
 sodae, 5 to 30 mins.
 sodii arseniatis, 3 to 7 mins.

Lithii benzoas, 2 to 5 grs.

bromid., 1 to 3 grs.

carb., 2 to 6 grs.

citr., 2 to 5 grs.

salicylas, 2 to 8 grs.

Lupulinum, 5 to 10 grs.

Magnesia, 15 to 60 grs.

Magnesi carb., 15 to 60 grs.

citr. gran., 2 to 4 drs.

Magnes. sulphas, 2 to 8 drs.

sulphis, 8 to 30 grs.

Mangani sulphas, 2 to 10 grs.

Manna, 1 to 2 ozs.

Massa hydrarg., 1 to 10 grs.

Morphina and its salts, $\frac{1}{2}$ to $\frac{1}{4}$ gr.

Narceina, 1-6 to 2 grs.

Nitro-glycerinum, 1-100 to 1-16 gr.

COMPLETE DOSE LIST—CONTINUED.

- Nux vomica, 1 to 5 grs.
 Oleoresina capsici, 1-6 to $\frac{1}{2}$ gr.
 cubebae, 5 to 30 grs.
 lupulini, 2 to 5 grs.
 piperis, 1 to 3 grs.
 zingiberis, 1 to 3 grs.
 Oleum copaibae, 8 to 15 mins.
 cubebae, 15 to 30 mins.
 eriger, 5 to 15 mins.
 eucalypti, 10 to 30 mins.
 phosphoratum, 1 to 3 mins.
 sabinae, 1 to 3 mins.
 terebinth., 5 to 60 mins.
 tigllii, 1 to 4 drops.
 Opium (14 p. c. mor.) 1-6 to 1 $\frac{1}{2}$ grs.
 Pepsinum purum, 15 grs.
 saccharatum, 30 grs.
 Phosphorus, 1-128 to 1-20 gr.
 Physostigmine sal., 1-120 to 1-64 gr.
 Sulphas, 1-128 to 1-64 gr.
 Picrotoxinum, 1-64 to 1-32 gr.
 Pilocarpina and salts, 1-64 to $\frac{1}{2}$ gr.
 Piperinum, 1 to 8 grs.
 Plumbi acet., $\frac{1}{2}$ to 3 grs.
 iodidum, $\frac{1}{2}$ to 3 grs.
 Potassii acet., 15 to 60 grs.
 bicarb., 8 to 60 grs.
 bitartr., 1 to 2 drs.
 bromid., 8 to 60 grs.
 carb., 8 to 30 grs.
 chloras, 5 to 30 grs.
 citras, 15 to 60 grs.
 cyanid., 1-16 to 1-8 gr.
 et sodii tartr., $\frac{1}{2}$ to 1 oz.
 iodid., 5 to 20 grs.
 nitras, 8 to 15 grs.
 sulphidum, 1 to 10 grs.
 sulphis, 15 to 30 grs.
 tartras, 1 to 8 drs.
 Pulv. antimonialis, 3 to 10 grs.
 glycyrrh. comp., 30 to 60 grs.
 ipecac et opii, 5 to 15 grs.
 jalapae comp., 30 to 60 grs.
 rhei comp., 30 to 60 grs.
 Quinidina (and salts), 1 to 30 grs.
 Quinina (and salts), 1 to 30 grs.
 Quininae arsenias, 1-6 to 1 gr.
 Resina copaibae, 2 to 10 grs.
 jalapae, 2 to 5 grs.
 podophylli, $\frac{1}{2}$ to $\frac{1}{2}$ gr.
 scammonii, 2 to 10 grs.
 Rheum, 2 to 30 grs.
 Salicinum, 8 to 30 grs.
 Santonica, 8 to 60 grs.
 Scammonium, 1 to 5 grs.
 Scammonium, 15 grs.
 Senna, 8 to 60 grs.
 Sodii acet., 15 to 60 grs.
 arsenias, 1-65 to 1-10 gr.
 benzoas, 5 to 15 grs.
 bicarb., 8 to 30 grs.
 bisulphis, 8 to 30 grs.
 boras, 8 to 30 grs.
 bromid., 8 to 30 grs.
 carb., 8 to 30 grs.
 hypophosphis, 8 to 15 grs.
 hyposulphis, 8 to 30 grs.
 iodidum, 5 to 15 grs.
 phosphas, 2 to 15 grs.
 salicylas, 5 to 30 grs.
 santoninas, 2 to 10 grs.
 sulphas, 1 to 2 drs.
 sulphis, 8 to 10 grs.
 Spir. æther., 30 to 60 mins.
 æther. nitrosi, $\frac{1}{2}$ to 2 fl. drs.
 ammoniae, 8 to 30 mins.
 ammoniae arom., 15 to 60 mins.
 camphorae, 8 to 30 mins.
 chloroformi, 15 to 60 mins.
 lavend. comp., 30 to 60 mins.
 menth. pip., 30 to 60 mins.
 Strych. (and salts), 1-64 to 1-12 gr.
 Sulphur, $\frac{1}{2}$ to 4 drs.
 Syrupus acidi hydriod., 1 to 4 fl. drs.
 calcis, 15 to 30 mins.
 ferri bromidi, 15 to 60 mins.
 ferri iodidi, 15 to 60 mins.
 hypophosphit., 1 fl. dr.
 ipecac, $\frac{1}{2}$ to 4 fl. drs.
 krameriae, $\frac{1}{2}$ to 4 fl. drs.
 rhei, 1 to 4 fl. drs.
 rhei arom., 1 to 4 fl. drs.
 rosae, 1 to 2 fl. drs.
 rubi, 1 to 2 fl. drs.
 sarsap. comp., 1 to 4 fl. drs.
 scillae, $\frac{1}{2}$ to 1 fl. dr.
 scillae comp., 15 to 60 mins.
 senegae, 1 to 2 fl. drs.
 sennae, 1 to 4 fl. drs.

Tinctura

- aconiti fol., 5 to 16 mins.
 aconiti rad., 1 to 5 mins.
 acon. rad. (Flemings), $\frac{1}{2}$ to 2 $\frac{1}{2}$ m.
 aloes et myrrhæ, 1 to 2 fl. drs.
 arnicae rad., 15 to 30 mins.

COMPLETE DOSE LIST—CONTINUED.

Tinctura

asafoetidae, 30 to 60 mins.
 belladonnae, 5 to 15 mins.
 bryoniae, 15 to 30 mins.
 calendulae, 15 to 30 mins.
 columbae, 1 to 4 fl. drs.
 cannabis ind., 15 to 30 mins.
 cantharid, 5 to 15 mins.
 capsici, 8 to 15 mins.
 catechu comp., $\frac{1}{2}$ to 2 fl. drs.
 cimicifugae, 30 to 60 mins.
 cinchonae, $\frac{1}{2}$ to 2 fl. drs.
 cinchonae comp., $\frac{1}{2}$ to 2 fl. drs.
 colchici rad., 5 to 15 mins.
 colchici sem., 5 to 15 mins.
 conii, 5 to 30 mins.
 cubebae, 1 to 2 fl. drs.
 digitalis, 5 to 15 mins.
 ferri chloridi, 15 to 60 mins.
 gelsemii, 5 to 10 mins.
 guaiaci, 30 to 60 mins.
 guaiaci ammon. 30 to 60 mins.
 hellebori, 10 to 15 mins.
 humuli, 1 to 4 fl. drs.
 hydrastis, 30 to 90 mins.
 hyoscyami fol., 15 to 60 mins.
 hyoscyami sem., 15 to 30 mins.
 ignatiae, 5 to 15 mins.
 iodi, 5 to 15 mins.
 ipecac. et opii 5 to 15 mins.
 jalapae, $\frac{1}{2}$ to 2 fl. drs.
 kino, $\frac{1}{2}$ to 2 fl. drs.
 krameriae, $\frac{1}{2}$ to 2 fl. drs.
 lavend. comp., $\frac{1}{2}$ to 2 fl. drs.
 lobeliae, 15 to 45 mins.
 lupulini, $\frac{1}{2}$ to 2 fl. drs.
 metico, $\frac{1}{2}$ to 2 fl. drs.
 nuc. vomicae, 5 to 30 mins.
 opii, 5 to 25 mins.

Tinctura

opii camph., 1 to 4 fl. drs.
 physostigmatis, 5 to 15 mins.
 quassiae, $\frac{1}{2}$ to 2 fl. drs.
 rhei, 1 to 8 fl. drs.
 rhei arom., 30 to 75 mins.
 rhei dulc., 1 to 4 fl. drs.
 sanguinariae, 15 to 60 mins.
 scillae, 8 to 60 mins.
 serpentariae, $\frac{1}{2}$ to 1 fl. dr.
 stramon. fol., 5 to 5 mins.
 stramon. sem., 6 to 15 mins.
 strophanthus, 1 to 10 mins.
 sumbul, 8 to 30 mins.
 valer., $\frac{1}{2}$ to 2 fl. drs.
 valer., ammon., $\frac{1}{2}$ to 2 fl. drs.
 veratr. vir, 1 to 10 mins.
 zingiberis, 15 to 60 mins.
 Tritur. elaterini, $\frac{1}{2}$ to $\frac{1}{2}$ gr.
 Veratrina, 1-100 to 1-32 gr.
 Vin. aloes, 1 to 2 fl. drs.
 antim. { expect. & alt. 1 to 8 m.
 { emet., 30 to 75 mins.
 colch. rad., 8 to 45 mins.
 Vin. colch. sem., 5 to 30 mins.
 ergotae, 1 to 4 fl. drs.
 Vin. ferri amar., 1 fl. dr.
 ferri citrat., 1 fl. dr.
 ipecac { expect., 5 to 15 mins.
 { emet., 2 to 4 fl. drs.
 opii, 5 to 10 mins.
 rhei, 1 to 2 fl. drs.
 Zinci acet., 1 to 2 grs.
 bromid., $\frac{1}{2}$ to 2 grs.
 iodid., $\frac{1}{2}$ to 3 grs.
 oxid., 1 to 10 grs.
 phosphid., 1-10 to $\frac{1}{2}$ grs.
 sulphas, emet., 15 to 30 grs.
 valerianas, 1 to 6 grs.

NUMBER OF DROPS IN A FLUID DRACHM.

(When dropped from ordinary bottle.)

Acid. hydrocyan. dil. 45.
 muriatic, 54.
 nitric, 84.
 nitric. dil., 62.
 sulphuric, 90.
 sulphuric arom., 116.
 sulphuric dil., 54.
 Alcohol, 118
 Aq. ammoniæ, 49.
 Creasote, 91
 Chloroform, 180.

Liq. hyd. et arsen. iod., 52.
 pot. arsenitis, 60.
 Tinct. aconiti, 118.
 Tinct. digitalis, 120.
 iron, 106.
 opii, 147.
 opii camph., 110.
 Vin. antimonii, 87.
 colchici, 75.
 opii, 92.

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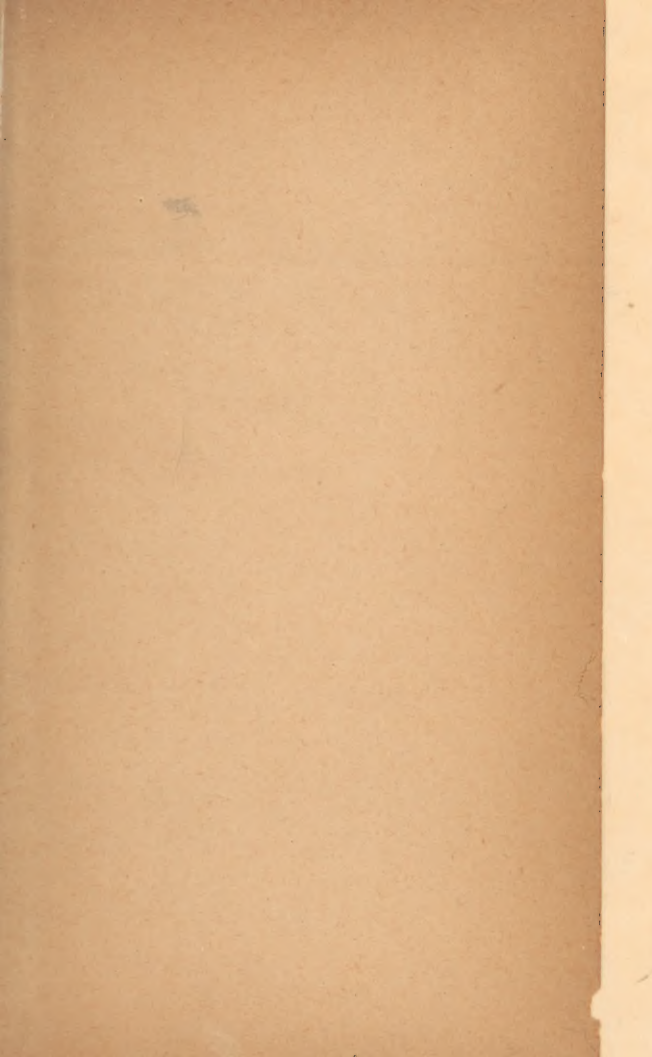
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